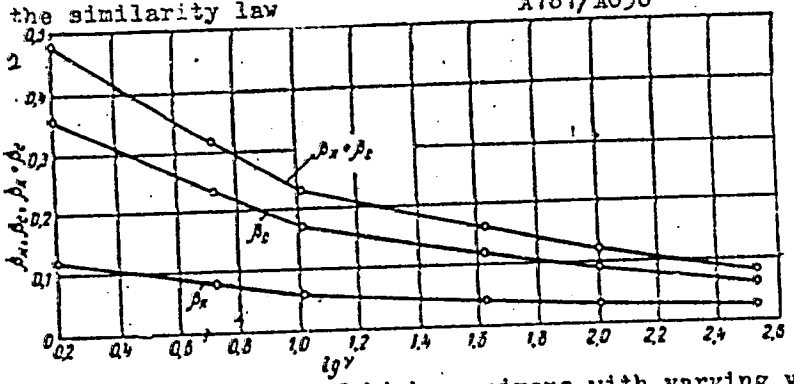
S/148/60/000/009/008/025
A161/A030

Inaccuracy of the similarity law

Fig. 2



Variation of the specific surface of high specimens with varying volume:

$$\frac{D_0}{H_0} = 0.5; \quad \frac{D}{H_k} \approx 0.7 ; \quad \varepsilon_0 = 20.0\%$$

(D - specimen diameter after upsetting; H_k - height of specimen after upsetting; β_z - coefficient of specific free (side) specimen surface)

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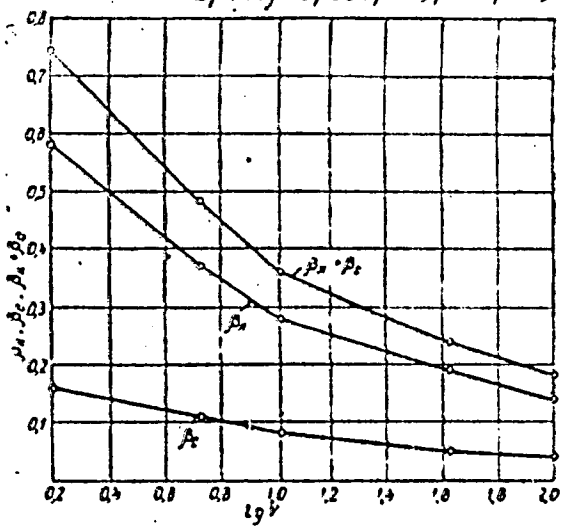
S/148/60/000/009/008/025

Inaccuracy of the similarity law

Fig. 3



Variation of the specific surface of low specimens with varying volume

Card 5/5

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)

ALTYKIS, A.V.; BEREZHKOVSKIY, D.I.; VOLKOVITSKIY, V.F.; GIRSH, I.I.[deceased]; GOL'MAN, L.D.; GRANOVSKIY, S.P.; DOBRINSKIY, N.S.; ZIMIN, A.I.; ZLOTNIKOV, S.L.; KAGALOVSKIY, A.I.; LOBACHEV, P.V.; MARTYNOV, V.N.; MOSHNIN, Ye.N.; NAVROTSKIY, G.A.; OKHRIMENKO, Ya.M.; ROVINSKIY, G.N.; STOSHA, Ye.A.; ROZHDESTVENSKIY, Yu.L.; TIKHOMIROV, N.V.; UNKSOV, Ye.P., doktor tekhn. nauk, prof.; SHCHEGLOV, V.F.; SHOFMAN, L.A.; SIROTIN, A.I., red. izd-va; MODEL', B.I., tekhn. red.

[Present state of the forging industry]Sovremennoe sostoianie kuznechno-shtampovochnogo proizvodstva. By Kollektiv sovetskikh i chekhoslovatskikh avtorov. Moskva, Mashgiz; Prague, SNTL, 1961. 434 p. (MIRA 14:8)

(Forging)

OKHRIMENKO, Ya.M.; KOPYSKIY, B.D.

Method of studying pressure distribution of plastic materials on the contact surfaces of dies. Izv.vys. ucheb. zav.; chern. met. no.3:45-53 '61. (MIRA 14:3)

1. Moskovskiy institut stali.
(Deformations(Mechanics)) (Forging)

10 A100

S/148/61/000/005/006/015
E111/E152

AUTHORS: Okhrimenko, Ya.M., and Kopyskiy, B.D.

TITLE: Contribution to the problem of measuring normal stresses in plastic deformation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1961, No.5, pp. 120-128

TEXT: The authors state theoretically that serious errors can arise when normal stresses developed during plastic deformation are measured by the usual technique using load cells calibrated under static conditions. To study the physical relationships involved in the measurement of contact pressures by multi-point load cell instruments, they used a single-point version (Fig.3) having all the main features of the multi point type (Fig.1 where 1 is contact surface, 2 the pins, 3 the load cells, 4 adjusting screws) but provided with a dial-gauge indicator that measured the compression of a helical spring. The spring was calibrated by direct loading and the apparatus was then used for experiments on the free upsetting of lead, copper, aluminium-alloy and steel cylinders. The results showed that the load-cell readings depend greatly on

Card 1/5

Contribution to the problem of

the material being tested and on the diameter of the pin. The measured normal pressures were considerably lower than the true working stresses the deviation increasing with increasing pin diameter and decreasing plasticity of the material. The stiffness of the cell should be commensurable with the mechanical characteristics of the material being deformed and allowance should also be made for the stress involved in the filling by this material of the hole in which the pin moves. The filling process takes place in three stages the elastic meniscus the plastic meniscus and the plastic column stages. As a confirmation of these relations the authors discuss results obtained (Ref.5: same journal, 1961 No.3) by them with a different (foil-imprint) method of investigating the normal stresses in the upsetting of cylindrical forgings. Their conclusion , from their own and published work is that at high deformations accompanied by considerable movement of the metal along the contact surface, load cells give high values for pressures. This is most probably due to the shearing of the column of metal which has flowed into the measuring hole. An important but difficult problem is how to measure and register the deformation of an "ideal" load cell whose

Contribution to the problem of .....

stiffness is equal to that of the instrument being deformed. The development of such a load cell should be pursued.
There are 9 figures and 5 references: 4 Soviet and 1 English.
The English language reference reads as follows:
Ref.4: A.G. MacDonald, S. Kobayashi, E.G. Thomsen. "Some Problems of Press Forging Lead and Aluminium". Trans. ASME, 1959, No.7.

ASSOCIATION: Moskovskiy institut stali
(Moscow Steel Institute)

SUBMITTED: December 28, 1960

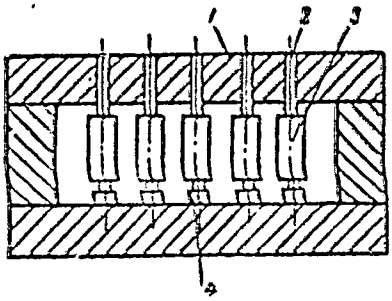
X

Card 3/5

Contribution to the problem of .....

23992
S/148/61/000/005/006/015
E111/E152

Fig. 1



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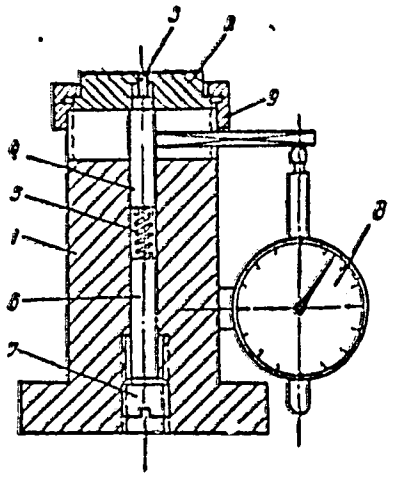
Contribution to the problem of .....

S/148/61/000/005/006/015
E111/E142

Fig.3.

1 - body;
2 - interchangeable pressure plate with metering hole and pin 3 (hole diameters 1, 2, 3 and 4 mm);
4 - supporting rod with bracket;
5 - helical spring with adjustable spring pressure;
6 - adjusting (setting) rod;
7 - threaded screw;
8 - dial gauge.



Card 5/5

PHASE I BOOK EXPLOITATION SOV/5799

Unksov, Ye.P., Doctor of Technical Sciences, Professor, Ed.

Sovremennoye sostoyaniye kuznechno-shtampovochnogo proizvodstva (Present State of the Pressworking of Metals) [Moscow] Mashgiz, 1961. 434 p. 5000 copies printed.

Ed. of Publishing House: A.I. Sirotin; Tech. Ed.: B.I. Model'; Managing Ed. for Literature on the Hot Working of Metals: S.Ya. Golovin, Engineer.

Title: Kuznechno-shtampovochnoye proizvodstvo v SSSR (The Pressworking of Metals in the USSR) by: A.V. Altykis, D.I. Berezhkovskiy, V.F. Volkovitskiy, I.I. Girsh (deceased), L.D. Gol'man, S.P. Granovskiy, N.S. Dobrinskiy, A.I. Zimin, S. L. Zlotnikov, A.I. Kagalovskiy, P.V. Lobachev, V.N. Martynov, Ye.N. Moshnin, G.A. Navrotskiy, Ya.M. Okhrimenko, G.N. Rovinskiy, Ye.A. Stosha, Yu.L. Rozhdestvenskiy, N.V. Tikhomirov, Ye.P. Unksov, V.F. Shcheglov, and L.A. Shofman; Eds: Ye.P. Unksov, Doctor of Technical Sciences, Professor, and B.V. Rozanov.

Title: Kuznechno-shtampovochnoye proizvodstvo v ChSSR (The Pressworking of Metals in the Czechoslovak SR) by: S. Burda, F. Hrazdil, F. Drastík, F. Zlatohlávek

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Present State of the (Cont.) SOV/5799

Z. Kejval, V. Krauz, F. Kupka, F. Majer, K. Marvan, J. Novák, J. Odehnal, K. Paul, B. Sommer, M. Honz, J. Částka, V. Šindelář, and J. Solc; Eds.: A. Nejepsa and M. Vlk.

PURPOSE: This book is intended for engineers and scientific personnel concerned with the pressworking of metals.

COVERAGE: Published jointly by Mashgiz and SNTL, the book discusses the present state of the pressworking of metals in the USSR and the Czechoslovak Socialist Republic. Chapters were written by both Soviet and Czechoslovak writers. No personalities are mentioned. There are 129 references: 98 Soviet, 16 English, 8 German, 5 Czech, and 2 French.

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PRESSWORKING IN THE USSR

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AVAILABLE: Library of Congress

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VK/wrc/bc
12-7-61

S/148/61/000/003/004/015
A161/A133

18.8200

AUTHORS: Okhrimenko, Ya.M., Kopyskiy, B. D.

TITLE: A method of studying the pressure distribution of plastic material on the contact surface of tool

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 3, 1961, 45 - 53

TEXT: A new simple method to measure the distribution of metal stresses on press tools has been developed and is now being used at the Moscow Steel Institute. It was the subject of Ya. M. Okhrimenko's dissertation for the degree of a Doctor of Technical Sciences in 1959. The principle of the method is the determination of the pressure exerted by metal by means of holes of definite small diameter drilled in upsetting plates, and foil of sufficiently strong but plastic metal (brass, copper) placed on the holes. The pressure exerted by the metal on the plate all over the contact surface is determined by the height of spherical bosses on the foil produced by the metal squeezed into the holes. The height of imprints was calibrated by means of an especially designed hydraulic calibrating device, consisting of a massive thick-walled cylinder with a bore that is closed with a

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A161/A133

A method of studying the pressure distribution...

sealed piston on the top, and holds the calibrating disk in the bottom. The foil is clamped between the disk with holes and a sealing washer of polyethylene. The screw plug serves for the tightening of the whole system. A thin duct in the cylinder wall is connected to the device work chamber with pressure fluid (water or oil) to a pipe leading to a pressure gage. A calibration curve is illustrated. A comparison of pressure epures obtained by the new method with data of other conventional pressure measurement methods shows identical regularities. The foil in couple with holes of definite diameter presents a sufficiently accurate and small pressure pickup that makes it possible to measure the pressure in press tool spots that are most difficult of access. The article includes the theory of the method. The method has been developed further for the measurement of pressures inside the metal being deformed, with the aid of "witnesses" in the form of 5 x 5 x 5 mm steel cubes with holes in the faces and a foil over the holes attached with glue. The "witnesses" are suspended on thin wires in the mold that is filled with metal to be investigated, and thus set into the ingot. The ingot is melted after the deformation and the "witnesses" retrieved. Imprints on the foil show the pressure that had been exerted on all six faces of the cubes. It is stressed that the calibration on the foil must be complemented by the calibration on the metal being investigated. There are 5 figures and 5 references: 4 Soviet-bloc and 1 non-Soviet

Card 2/3

A method of studying the pressure distribution ...

-bloc. The reference to the English-language publication reads as follows: J. Frisch. Contribution to the Knowledge of Pressure Measurements During Metal Deformation. Transaction of the ASME, no. 4, 1955.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: July 1, 1960

Card 3/3

OKHRIMENKO, Ya.M.; KOPYSKIY, B.D.

Measuring normal stresses in plastic deformation. Izv.vys.ucheb. zav.; chern.met. 4 no.5:120-128 '61. (MIRA 14:6)

1. Moskovskiy institut stali.
(Deformations (Mechanics))

S/182/61/000/009/002/005
D038/D112

AUTHORS: Okhrimenko, Ya.M. and Kopyskiy, B.D.

TITLE: Experimental study on the pressure of ductile metal on the walls of a tool (when compressed in a blind cavity)

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 9, 1961, 7-11

TEXT: The authors state that according to many investigators the elastic constants of lead, steel at forging temperature, etc., are subjected to the hydrostatic law, and that as these metals approach the smelting temperature the Poisson ratio approaches 0.5, whereas N.N. Davidenkov and S.P. Shikhobalov (Ref. 1: O bokovom davlenii tverdykh tel na zhestkiye stenki [On the lateral pressure of solids on rigid walls]. Sb. "Eksperimental'nyye metody opredeleniya napryazheniy i deformatsiy v uprugoy i plasticheskoy zonakh" [The experimental methods of determining stresses and deformations in elastic and plastic zones], ONTI NKTP, 1935) point out that the elastic constants of lead are not subjected to the hydrostatic law, and that the lead modulus of elasticity reaches 7000 kg/cm^2 - 0.45.

Card 1/3

Experimental study...

To disprove the fallacy of the first theory the kafedra kuznechno-shtampovochnogo proizvodstva Moskovskogo instituta (the Department of Forging and Stamping Production of the Moscow Institute) has carried out an investigation into the distribution of the pressure of ductile metal on the bottom and the walls of a tool when the metal is compressed in a blind cylindrical cavity (a container). The distribution of pressure on the walls of a die cavity was determined by extruding the metal through narrow slits placed along the vertical longitudinal cross section of the blind cylindrical cavity of an experimental die. One and two counter-moving punches were used. 60 mm diam, 60 mm high C1 (S1) lead specimens were tested on a container comprising an upper and a lower punch, 2 semi-bushings with a vertical joint and clamps; 3.75, 7.5, 15, 30, and 60 mm high blanks were investigated. The authors conclude that it is possible to distinguish an "active" contact surface which transmits external force, and a "passive" force which absorbs oblique lateral pressure on the wall of the cavity. Only in one particular investigated case of compression in the cavity did the friction forces act unilaterally towards each other, and radially.

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Experimental study...

The interrelation of compressed metal with the active and passive surfaces is somewhat different, and requires further investigations on the complexity of physical phenomena connected with the pressure of metal on the contact surface of metal. There are 6 figures, and 5 Soviet references.

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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 5Х3ГС (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
5Х3ГС (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
6Х3ГС (6Kh3GS)	0.65	0.98	1.19	3.24	≤0.04	≤0.045

as materials for hot-forging dies. The comparative study of these 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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Chromium-silicon-manganese steel ...

(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

Card 2/[illegible]5

Chrom[illegible] steel

steel 7X5 (7KhS) were observed after 30 cycles and in steel 5KhSGS after 50 cycles. In the next series of experiments it was established that when hardened steel 5KhSGS was tempered for 1.5 hours at temperatures from 400 - 650 °C, the decrease in the hardness with the tempering temperature was less pronounced (from 52 HRC after tempering at 450 °C to 34 HRC after tempering at 650 °C) than in steel 5XH (5KhN) or 5XT (5KhT). Hot-hardness tests were carried out by the Brinell method on hardened and tempered specimens. The results are reproduced in Table [illegible]. Two series of impact tests were carried out. In the first the test pieces of steel 5KhSGS 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. [illegible]

where a_k (kgm/cm^2) is plotted against the tempering [illegible]

Curves 1, 2 and 3 relating, respectively to specimens which after tempering, were oil-quenched, cooled in air, and furn[illegible]

Card 3/[illegible]

Chromium-silicon-manganese steel ...

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 5[illegible] (5KhNM) and 7x3 (7Kh3) increased respectively by 0.08 0.11 and 0.21 mm. The final tests were carried out under industrial conditions. Piercing punches such as used in the third [illegible] of flanges on a horizontal 1 000-ton press were [illegible] from the steels 5Kh4GS and 5Kh3GS. They were 416 mm [illegible] with the working part 180 mm and 55 mm in diameter. Whereas the average working life of steel 7Kh3 punches used to be [illegible] operations the average life of the experimental [illegible] was 1 650 [illegible] on the basis of [illegible]

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Chromium-silicon-manganese steel.. E193/E383

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, $\leq$ 0.03% S and $\leq$ 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/[illegible]

S/182/61/000/012/001/004
D038/D112

AUTHORS: Okhrimenko, Ya.M. and Shibalov, M.S.

TITLE: On an isothermal forging method

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 12, 1961, 1-4

TEXT: To meet the isothermal forging requirements for heat-resisting alloys, the laboratory of the Kafedra "Kuznechno-shtampovochnoye proizvodstvo" Moskovskogo instituta stali ("Forging and Stamping Production" Department of the Moscow Steel Institute) investigated the efficiency of tubular aluminum reflectors in reducing the speed of cooling of round billets of heat-resisting alloy, heated to forging temperature. Billets of ЭИ617 (EI617) alloy, 50 mm in diameter and 170 mm long, were heated to 1,160°C and held for 30 minutes in a silit-rod electric compartment furnace. During heating and cooling, the billets were placed horizontally in the reflectors. The average cooling time of the billets in the reflectors was 2.6 times as long as in air. It was recommended to cool the billets in the reflectors only down to 1,000°C, as below this temperature the reflectors become heated themselves

Card 1/2

and thus lose their heat-reflecting ability. The efficiency of the reflectors diminishes with an increase in diameter, therefore reflectors with a coefficient K = 2.25-2.5 are recommended, where $K = \frac{\text{cooling time in reflector}}{\text{cooling time in air}}$. A figure shows one type of suspended aluminum reflector which has proved efficient; it is easily removable and increases work safety by reducing heat radiation at the work positions. However, it is not recommended for forging short billets. The isothermal requirements can be further satisfied by the use of an induction heater, also illustrated. An induction heater working on industrial current with a frequency of 50 cycles per second, can fully restore the heat by a 500 kg refractory-alloy ingot of 140 x 140 mm section in 2-3 minutes, the withdrawal period. Students V. Tyurin and A. Sergeyev participated in the laboratory work. There are 7 figures and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: Hardy, A.P. and Stringer, I.D., Heat reflectors in forging, "Journal of the Iron and Steel Institute", 1959.

S/182/62/000/012/002/005
D040/D112

AUTHORS: Kopyskiy, B.D. and Okhrimenko, Ya.M.

TITLE: An investigation of forces acting in burrless forging dies during operation

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no.12, 1962, 12-16

TEXT: The article is a contribution to accurate calculation of die dimensions in designing dies for burr-free forging. It presents the results of a theoretical and experimental investigation, the experimental part of which was carried out at the Novocherkasskiy elektrovozostroitel'nyy zavod (Novocherkassk Electric Locomotive Plant), where, although burrless forging dies are being introduced, the reduced life of the dies does not give the expected saving. The experiments were conducted with especially designed dies showing the effect of different factors - the volume of the billet, the location of the die parting line, the geometry of die and cavity, the depth of the die cavity, the thickness of the die bottom, and the load on the punch. Stresses were measured with strain gages, amplified and oscillographed. Formulas were derived and a nomogram is suggested for determining the die dimensions. Technological recommendations are given. The recommendations include a detailed drawing of a recommended die design for forging flanged gears,

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and concern the location of the die parting, the tapers, and the use of a compensating cavity; the necessity to forge in 1-2 strokes only and to correctly judge the end of the forging process is stressed. The latter can be done with the use of radioactive isotopes signalling the presence of metal in the cavity corners. Dies designed on the basis of the investigation have a satisfactory life time, and the quality of the forgings is good. There are 10 figures.

37241

S/148/62/000/003/006/011
E193/E383

18.1151

AUTHORS: Okhrimenko, Ya.M., Tsibanova, M.S. and Shibalov, N.S.

TITLE: Work-hardening and recrystallization of the alloy ЭИ617 (EI617)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1962, no. 3, 95 - 102

TEXT: The results of studies of workability of heat-resistant alloys conducted at the Moscow Steel Institute indicate that optimum results in hot forging can be attained either by isothermal forging at a temperature ensuring the highest possible plasticity and best combination of mechanical properties of the forged part, or by forging in the widest possible temperature range and then heat-treating the forged component. Difficulties have been encountered in applying the latter method to the EI 617 alloy in that a large proportion of scrap has been produced under industrial conditions due to cracking, apart from the fact that the productive efficiency of this method has been low owing to a narrow permissible forging-temperature range (1 000 - 1 160 °C) - hence the

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Work-hardening and ....

present investigation whose object was to study the recrystallization of the alloy EI 617 so as to determine the limits of the temperature range within which the effect of plastic deformation would be nullified by recrystallization. In the first series of experiments various reductions were given to wrought test pieces (10 mm diameter, 15 mm high) by free upsetting on a laboratory drop hammer at temperatures ranging from 850 - 1 250 °C, and the degree of recrystallization taking place during hot deformation was determined by metallographic examination; in addition, the reduction at which the first cracks appeared in the test pieces was determined for each test temperature. The results are reproduced in Fig. 1, where the maximum permissible reduction (ε, %) is plotted against the forging temperature (°C). The second series of experiments differed from the first in that cast test pieces, or specimens obtained by forging cast material, were used. The results are reproduced in Fig. 2, where the maximum permissible reduction in free upsetting (ε, %) is plotted against the forging temperature (°C), the various curves

Work-hardening and ....

relating, respectively, to: 1 - cast material, upset on a drop hammer; 2 - forged material upset on a drop hammer; 3 - forged material upset on a forging press. In the third and final series of experiments, the onset and the rate of progress of weakening of the alloy were studied by a new method based on the assumption that in the case of a specimen deformed plastically at a high temperature under a given stress, the load will decrease if weakening of the test-piece material takes place, the load-versus-time curve providing means of assessing the rate and intensity of the process. A beam-type tensile-test machine was used in applying this method to avoid the risk of the load decreasing due to spurious effects. The tests were carried out both in tension and compression at temperatures ranging from 850 - 1200 °C, an electrical-resistance furnace mounted on the tensile testing machine being used to heat the test piece and maintain its temperature throughout each test. After heating the test piece and stabilizing the temperature the load was applied and when a certain degree of plastic deformation had taken place, the testing machine was stopped and from that

Work-hardening and ....

moment the variation of load in time was recorded [Abstracter's note - although not explicitly stated, the relationship studied was, in fact, the load-versus-time relationship at a constant strain]. Some of the typical results obtained for specimens tested in tension are reproduced in Fig. 6a and 6ß in the form of load (P, kg)-versus-time (min) curves, graphs a and ß relating to test temperatures of 850 and 950 °C, respectively. (the broken curves represent results obtained on specimens tested under initial load producing no plastic deformation). A load of 1 000 kg (equivalent to a stress of 35 kg/mm^2) applied to a test piece at 850 °C produced a strain $\Delta\ell$ = 0.7 mm ($\varepsilon \approx 2\%$); the test piece broke after 15 min, although the UTS of the EI 617 alloy at 850 °C had been found to be approximately 48 kg/mm^2. A load of 800 - 1 000 kg, applied at 900 °C, produced very slight plastic deformation and did not decrease in time. At 950 °C, however, a load of 1 000 kg produced elongation of 2 - 3% and decreased after 4 min to 550 kg. Above 950 °C the rate at which the load decreased with holding time increased rapidly with rising temperature. Thus, for instance, a load

Work-hardening and ....

producing ε = 11% at 1 200 °C decreased by 60% in 20 sec. Compression tests yielded similar results. The data provided by mechanical tests and correlated with results of metallographic examination indicated that the lowest temperature at which the effects of hot plastic deformation are nullified by recrystallization taking placed during the deformation process is 1 000 °C for wrought and 1 050 °C for cast EI617. This temperature sets the lower limit of the temperature range within which the alloy studied can be successfully hot-worked. The upper limit of 1 220 °C is set by the fact that at higher temperatures workability of the alloy falls rapidly due to excessive grain growth. There are 7 figures.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: October 30, 1961

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Work-hardening and ....

S/148/62/000/003/006/011
E193/E383

Fig. 1:

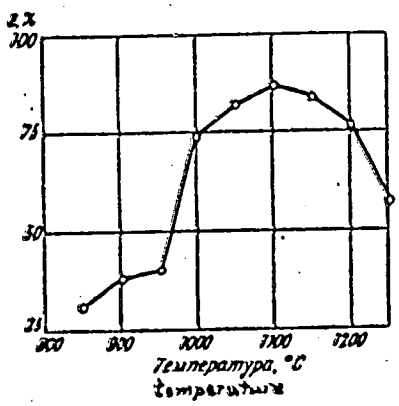
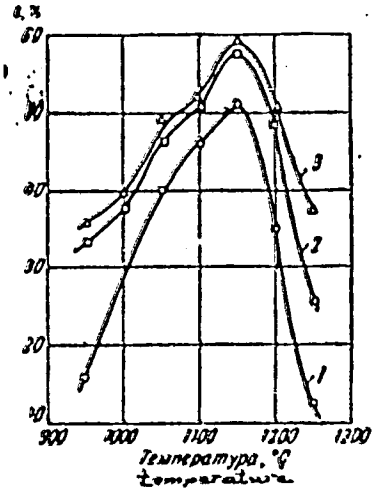


Fig. 2:



Card 6/6

S/148/62/000/009/003/007
E193/E383

AUTHOR: Okhrimenko, Ya.N.

TITLE: A quantitative method of investigating the softening of metals during hot deformation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, no. 9, 1962, 111 - 115

TEXT: Since it has been established that annealing of a cold-worked metal does not provide a model of softening of metals during hot deformation, the need for a direct method of studying the latter process has become more urgent. Such a method has now been developed by the present author. In principle, the method consists of plastically straining a test piece. locking the testing (deformation) machine at the moment when a predetermined value P of the applied load has been attained and plotting load against time, the resultant graph providing the characteristics of the process of softening of the metal studied. The basic requirement of the method is that the plastic deformation of the test piece after locking the machine should be very small in comparison with the initial plastic strain.

A quantitative method ....

This can be achieved with the aid of various equipment such as crank-operated presses, hydraulic presses or even a tensile testing machine of the lever type. The course of a typical experiment is shown schematically in Fig. 1 (curve 2), where σ_1/σ is plotted against τ; here, τ denotes time, σ_1 is the resistance of the metal to deformation at a given moment and σ is the resistance of the metal to deformation (at the test temperature) in the absence of work-hardening, i.e. at zero strain rate. Curve 1 in Fig. 1 represents the curve of minimum resistance to deformation at a given temperature, i.e. the curve obtained in the absence of work-hardening. Curve 2 (continuous) consists of two branches: that on the lefthand side of line I represents the process of work-hardening; the branch on the righthand side of line I represents softening of the metal. The position of point K depends on the rate of strain during the loading stage. The region between lines I and II corresponds to intensive softening of the metal. On the left of line II the rate of softening gradually diminishes and the curve approaches

A quantitative method....

asymptotically the horizontal part of curve 1. The degree of softening is given by

$$q = \frac{\sigma' - \sigma''}{\sigma} = \frac{\Delta\sigma}{\sigma}$$

and the intensity of the softening process can be assessed from

$$i = q/\tau \cdot$$

The softening curves plotted in the P(kg)/τ(min) coordinates for the alloy ЭИ617 (EI617) at various temperatures are reproduced in Fig. 3. These and other results obtained by the method under consideration showed that it was eminently suitable for studying work-hardening and softening of metals during hot-working operations under real conditions and for obtaining valuable information on the effect of various factors (temperature, rate of strain, contact friction, shape and size of the deformed article, its composition, etc.) on the parameters of various plastic-working operations. There are 3 figures.

Card 3/4

S/148/62/000/009/003/007
A quantitative method E193/E383

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

SUBMITTED: April 20, 1962

Fig. 1:

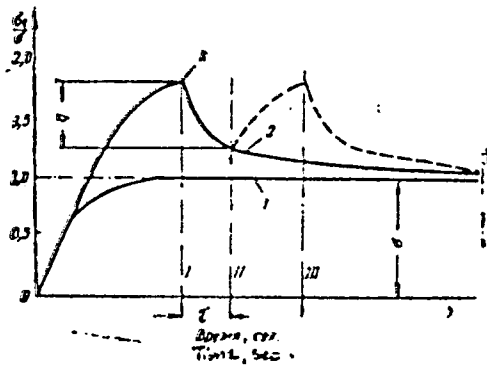
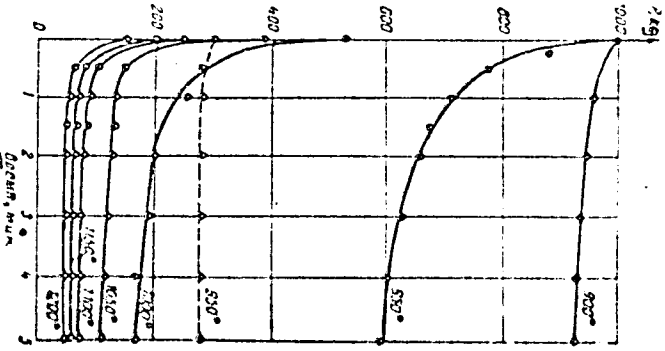


Fig. 3:



Card 4/4

OKHRIMENKO, Ya.M.; KOPYSKIY, B.D.

Stresses in the walls of hollow dies. Izv.vys.ucheb.zav.; chern. met. 5 no.11:113-120 '62. (MIRA 15:12)

1. Moskovskiy institut stali i splavov.
(Dies (Metalworking)) (Strains and stresses)

S/182/63/000/003/001/008
A004/A127

AUTHORS: Okhrimenko, Ya. M., Tyurin, V. A.

TITLE: The effect of the deformation and wear of calibration instruments on the accuracy and surface finish of [illegible]

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 3, 196[illegible], [illegible] - 4

TEXT: The authors emphasize the fact that the effect of [illegible] and wear of calibration instruments on the accuracy and surface [illegible] has not been sufficiently studied hitherto. They report on a number of tests that were carried out at the ZIL Plant to find out the degree and extent of calibration-instrument wear and quote in this connection the example of wear of the flat surface of a calibrating plate that, in the course of service life, became concave. It was revealed at the ZIL [illegible] ing shop that after reduction on the embossing press of 100 steering shaft forgings, the lower plate, characterizing the instrument wear, showed a concavity of 0.01 mm. The authors give a detailed description of wear phenomena on calibration instruments, present a number of graphs

Card 1/2

The effect of the deformation .....

and four different schemes according to which, depending on the properties of the material being deformed, the investigated phenomena may take [illegible]. There are 7 figures.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910011-6"

GKHRIMENKO, Ya.M.

Method for determining the yield strength of a metal at high temperatures. Zav.lab. 29 no.8:976-978 '63. (MIRA 16:9)

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

S/0182/64/000/005/0003/0006

ACCESSION NR: AP4038696

AUTHORS: Vakhtanov, B. F.; Dzugutov, N. Ya.; Okhrimenko, Ya. M.

TITLE: On the deformation magnitude necessary for the recrystallization of difficult to deform alloys

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 5, 1964, 3-6

TOPIC TAGS: alloy steel, deformation, high alloy steel, alloy EI437B, alloy EI696, alloy EI617, alloy EI787, recrystallization, annealing effect, thermal treatment, forging, metal shrinkage, cast structure

ABSTRACT: Experiments were performed to determine: 1) minimum deformation (induced by upset forging) necessary to induce the recrystallization process in difficult-to-deform alloys; 2) the amount of metal shrinkage required for a complete recrystallization in hammer forging of the alloys EI437B, EI696, EI617 and EI787. Because the recrystallization during deformation at optimal temperatures (1100-1160C) was incomplete, this process was followed by thermal treatments which involved annealing at 1080C, air cooling, aging at 750C for 16 hours, and final cooling in air. It was determined that 3-5% of deformation with subsequent thermal treatment was sufficient for the beginning of the recrystallization

Card 1/2

ACCESSION NR: AP4038896

process in alloys EI696 and EI787. Specimens removed from variously deformed, forged, square sections of metal were analyzed. The coefficients of section diminution equaled 1.5, 2, 3, 4, and 5. These analyses showed that the deformation in the axial zone (before thermal treatments) began after a two-fold diminution. After a five-fold diminution, the alloys EI437B, EI767 and EI617 still showed remnants of their cast structure. In the case of EI696 a five-fold diminution was sufficient for a complete recrystallization without thermal treatment. The same effect was achieved after a two-fold diminution in alloys EI787 and EI617, and after a three-fold diminution of alloy EI437B if forging was followed by proper thermal treatments. Orig. art. has: 1 table and 3 figures.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 05Jun64	ENCL: 00
SUB CODE: MM	NO REF SOV: 002	OTHER: 000

Card 2/2

L 19149-65
MJW/JD/HW

ACCESSION NR: AP4045810 S/0182/64/000/009

AUTHOR: Vakhtanov, B. P.; Okhrimenko, Ya. M.

TITLE: Conditions for healing internal cracks by forging high-alloy steels and alloys

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 9, 1964, 12-16

TOPIC TAGS: nickel alloy, ingot, forging, alloy steel, heat resistant alloy forging, heat resistant steel forging, defect self healing, defect, nickel base alloy, chromium nickel alloy, EI437B alloy, steel, KhN70VMTYu alloy

ABSTRACT: [illegible] required to weld internal [illegible] high-alloy steels [illegible] Preliminary [illegible] alloys, in part [illegible] 500—700 kg [illegible] lowest numbe[illegible]

Card 1/2

ACCESSION NR: AP4[illegible]

These ingots were used for further experiments. It was [illegible] cracks can be completely or to a large extent eliminated by forging nickel-base and [illegible] ingots with a reduction coefficient and iron-chromium-nickel-base alloys of the khN35VTYu or [illegible] type with a reduction coefficient of F. When forging in [illegible] hydraulic press, [illegible] lower reductions are required for the [illegible] healing of cracks. [illegible] results were also obtained by [illegible] forging with drop forging. [illegible] Orig. art. has: 5 figures and [illegible]

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 00[illegible] OTHER: 00[illegible]

2/2
Card

L 39689-65 EWP(k)/EWT(m)/EWA(d)/EWP(w)/EWP(t) [illegible]
IJP(c) MJW/JD/RM/JG

ACCESSION NR: AP5008[illegible] S/0148/65/000/003/[illegible]

AUTHOR: Vakhtanov, B. F.; [illegible]; Ya. M.

TITLE: Effect of reduction by forging on mechanical and heat-resistance [illegible] of KhN35VTYu alloy

SOURCE: IVUZ. Chernaya metallurgiya, [illegible], 77-80

TOPIC TAGS: heat resistant [illegible], chromium containing [illegible] steel containing alloy, [illegible] alloy, alloy property, [illegible] KhN35VTYu alloy

ABSTRACT: The effect of [illegible] on the mechanical properties, resistance, and [illegible] KhN35VTYu alloy has been studied. A series of specimens cut from [illegible] rods forged with reductions of [illegible] were annealed at [illegible] and at [illegible] for 4 hr, air cooled and aged for 16 hr, and then subjected to tensile tests at room temperature and [illegible] rupture tests (30 kg/mm² at [illegible]). Tests revealed that the mechanical properties of alloy deformed with 20% reduction are higher than those in the as-cast state. A particular increase is observed in elongation (twice as high) and in the reduction of area (1.5 times higher). The increase in tensile and yield strength

Card 1/2

L 39689-65

ACCESSION NR: AP5009381

less pronounced; [illegible] approximately 12% and 7.5% respectively [illegible] ture life is increased roughly [illegible]% by deformation. The ductility of forged [illegible] is much more uniform than that of wrought alloy, in forged alloy the difference between the minimum and maximum values does not exceed 30%. Improvement [illegible] anical properties is attained at reductions up to 80%, further deformation [illegible] beneficial effect. At a reduction of 95%, the mechanical properties tend [illegible] crease.. The anisotropy of mechanical properties at room and high temperatures found to be insignificant. Thus, the deformation-induced change in the properties of KnN35VTYu alloy is more pronounced than in the alloy steels, and the deformation-induced anisotropy is less pronounced. The first phenomenon can be explained by a low recrystallization rate, and the second, by the small quantity of metallic inclusions which, under the effect of deformation, stimulate the formation of a fibrous structure. [illegible] art. has [illegible] table and 1 figure

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

SUBMITTED: 11Jun64 ENCL: 00 SUB CODE: MM

NO REF SOV: 002 OTHER: 000 ATD PRESS: 3229

Card 2/2 MK

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

ACCESSION NR: AP5013322 UR/0148/65/000/005/0070/0075

669.15-194 : 539.214 : 548.7

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

TITLE: Temperature and rate conditions of deformation in ShKh15 steel during polymorphic transformation 14

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

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

ABSTRACT: The authors [illegible] previous work [illegible] kinetics of the superplastic [illegible] their effect on resulting strength plasticity properties [illegible] following three relationships: [illegible] ties (tensile strength) [illegible] of the transformation temperature, the [illegible] of α→γ and γ→α transformations upon uniaxial tensile stress [illegible] formation rate was effected by varying the heating and cooling rates [illegible] transformation range); and the effect of deformation rate during α→γ and γ→α transformations. Transformation was detected by magnetic measurement [illegible]

Card 1/2

L 36018-65

ACCESSION NR: AP5013327

surrounding the furnace heating [illegible] in which a current would be induced [illegible] formation in the specimen [illegible] with constant transformation and strain [illegible] plasticity properties were [illegible] lower and stronger higher for a specimen [illegible] ed rather than heated through the transformation range. This effect is [illegible] the formation of a cementite network [illegible] the cooled specimen. An experiment [illegible] so conducted attempting to [illegible] under practice conditions. These results [illegible] firmed the property changes [illegible] laboratory experiments. Orig. art. has figures.

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

SUBMITTED: 30Jun64 ENCL: 00 SUB CODE: MM

NO REF SOV: 006 OTHER: 000

Card 2/2

L 55200-65 EWT(l)/EWP(k)/EWP(b)/EWP(e)/EWA(c)/EWP(n)-2/EWP(d)/EPR/T/EWP(t)/ETI IJP(c) MJW/JD/WW/RM

ACCESSION NR: AP5015825 UR 0.82/65/000/036/0061/0061
611.992

AUTHOR: Zaleaskiy, V. I.; Shtrimenko, Ya. M.; Smirnov, O. M.; Vasil'yeva

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

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

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

ABSTRACT: Lithium coatings were studied as a method for lubrication during hot gauging of ring blanks at the VIS factory. The lubricant now used at the factory is a mixture of graphite and talc in water solution. This is a good lubricant but it clogs up the press and pollutes the air in the shop. The 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 tests were rings made of ShKh15 steel. The rings were heated in a hot lithium atmosphere, they were then cooled and held for several days at room temperature, after which they were again heated in an electric furnace to 1150-1250°C and gauged on a crankpress with a force of 250 tons. The deformation forces were measured

Card 1/2

L 55200-65
ACCESSION NR: AP5015827

guaging on a bar type strain gauge. Vaporization of a mixture of 50% Al
LiCl gives the best quality coatings. The optimum temperature range in the
rizer is 1100-1150°C. Gauging should be done immediately after coating
art. has: 2 figures, 2 tables.

ASSOCIATION: none

SUBMITTED: 00 ENCL 00 SUB CODE IE

NO REF SOV: 000 OTHER: 003

Card 2/2

L 64372-65 [illegible]

ACCESSION NR: AP5018673 UR/0122/65/000/007/[illegible]
621-419.4.002.2

AUTHORS: Yanin, V. Ye. [illegible]; [illegible], Ya. M. (Doctor of technical sciences, Professor) [illegible]

TITLE: New mode of deformation [illegible]

SOURCE: Vestnik mashinostroyeniya, no. 7, 196[illegible], [illegible]-71

TOPIC TAGS: bimetallic strip, brass, Invar bimetal, bimetallic strip deformation, N36 Invar brass, N42[illegible] Invar brass, [illegible] brass L[illegible] brass, [illegible] alloy

ABSTRACT: Plastic deformation of bimetallic specimens with the deformation forces directed parallel to the bonded surface between the metals was [illegible]ted. The specimens were prepared according to the method suggested by V. [illegible] Yanin, I. K. Antsiferov, and [illegible]. [illegible] (Sposob izgotovleniya bimetallicheskikh polos listov, [illegible] i tom. podobnykh izdeliy. Avtorskoye svidetel'stvo SSSR, No. [illegible]) from four bimetallic combinations [illegible] N36-brass L90; N36-L6[illegible]; N[illegible]-alloy [illegible]; [illegible] - [illegible]. Specimens were [illegible] and 38 mm high (see Fig. [illegible] in the enclosure) with A = 20, B = 19 mm, a_t a_T 1.0 for the first two bimetals and A = 16.[illegible], B = 16 mm a_t a_n = 0.6-0.[illegible] for [illegible]

Card 1/4

L 54372-65

ACCESSION NR: AP5018670

last two bimetals. Sixteen specimens of each bimetal were deformed 20, 40, ... 80% at 16 mm/sec. The resulting deformations were studied visually (after sectioning and etching) and by γ-radiation from isotopes. It was found that the bulging of the welded surface depended on the coefficient $n = p_t s_t / p_m s_m$ (where

$$\sigma_m = \sigma_t \left(1 + \frac{\mu t}{3} - \frac{a\phi}{\mu}\right)$$

$$\sigma_t = \sigma_m \left(1 + \frac{\mu_t}{3} - \frac{a_t}{\mu}\right)$$

μ = coefficient of friction at contact areas, $n > 1$, the bulge was in the direction of the soft metal, $n < 1$ was in the direction of the hard. It was found that the bimetal remained intact in all specimens (up to 80% deformation) but that cracks first appeared on the outside (at 40-45% deformation) and then at the welded surface at 70% deformation). The maximum strains ε_A and ε_B for each metal were found to increase linearly with ... curves of ε_A and ε_B versus ... (a sample curve is given) can be used to determine strip sizes for a given maximum strain. In general, it is suggested that for $\sigma_{Tt}/\sigma_{Tm} > 2.5$ F_3/A should be < 2; for < 2.5 it should be < 2.5

Card 2/4

L 64372-65
ACCESSION NR: AP5018670

Orig. art. has: 4 figures, [illegible] tables, and [illegible] formulas.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 01 SUB CODE: [illegible]

NO REF SOV: 005 OTHER: 000

Card 3/4

L 64372-65

ACCESSION NR: AP5018670

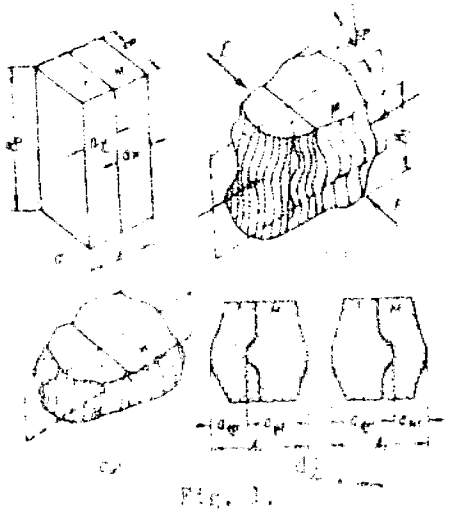


Fig. 1.

Specimen geometry: a- before deformation; b- after; c- after; d- section of [illegible] hard, M - soft metal

Joining of [illegible]

Card 4/4

20776-66 EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EIC(m)-6

ACC NR: AP6004679 SOURCE CODE: UR/0182/65/000/010/0001/0005

AUTHOR: Kazarinov, B. N.; Okhrimenko, Ya. M.

ORG: none

TITLE: Improvements in the process of forging turbine disks from EI437BU alloy

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 10, 1965, 1-6

TOPIC TAGS: turbine disk, drop forging, hot forging, metal grain structure / EI437BU Cr-Ni high-temperature alloy, solid mechanical property

ABSTRACT: The turbine disks forged from EI437BU Cr-Ni high-temperature alloy display some nonuniformity of mechanical properties and stress-rupture strength owing chiefly to their consertal structure; this may be offset by properly adjusting the forging technology, the paramount objective being to reduce to a minimum the danger of the formation of internal cracks in the finished elements (turbine disks). In this connection, the authors describe new experimental techniques for processing 700-kg ingots of EI437BU alloys into turbine disks. The blanks used are round rather than square, and this eliminates the possibility of the rise of axial cracks during the rounding process. Moreover, the hot upsetting of round blanks proceeds more uniformly, particularly when their height-to-diameter ratio is <2.5. Following their hot upsetting the blanks are heated to 1150±10°C in two-chamber gas furnaces and then drop-forged in dies heated to 250-300°C and lubricated with dry sawdust. The princi-

Card 1/2 UDC: 621.73.032

L 20776-66

ACC NR: AP6004679

pal advantage of the new technique appears to be the replacement of square blanks with round blanks, since comparison tests showed that disks forged from round blanks (diameter 220 mm) display superior mechanical properties and more uniform macrostructure before and after heat treatment (hardening at 1080°C for 8 hr with cooling in air: aging at 750±5°C for 16 hr with cooling in air) compared with the disks forged from square blanks (200x200 mm), since ready-made round blanks are free of the stresses present in square blanks when these have to be rounded prior to their hot upsetting. Orig. art. has: 7 figures, 2 tables.

SUB CODE: 11, 13, 20/ SUB DATE: none/ ORIG REF: 006/ OTH REF: 000

Card 2/2 vmb

ACC NR: AP6013479 (N) SOURCE CODE: UR/0182/65/000/012/0003/0005

AUTHOR: Okhrimenko, Ya. M.; Nedoseкin, L. I.; Faybisovich, L. I.; Troitskiy, V. P.; Birchenko, Ye. P.

ORG: none

TITLE: Forging with preliminary partial cooling of ingot surface

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 12, 1965, 3-5

TOPIC TAGS: metal forging, cooling, hot forging, metal deformation

ABSTRACT: The ingots produced by the present-day steel industry display as a rule various metallurgical defects such as shrinkage cavities, blowholes, internal cracks, etc. Defects of this kind persist in the forgings produced from these ingots, and their prevention can be accomplished by adjusting the regimes and sequence of the swaging, upsetting, drawing and other operations. At present there is no common consensus on the proper sequence and desirability of these operations. Recently, the Japanese investigators Mankichi Tateno and Shoichi Shikano (Closing of Internal Cavities in Heavy Forgings by Hot Free Forging [source not given]) described a new technique, based on the surface cooling of ingots to the temperature

Card 1/2 UDC: 621.73.032

OKHRIMENKO, Ya.M.

Deformations during upsetting. Izv. vys. ucheb. zav.; chern. met. 8 no.7 78-81 '65. (MIRA 18:7)

1. Moskovskiy institut stali i splavov.

KHRIMENKO, Ya.M.; TYURIN, V.A.

Methods of plotting the fields of local nonuniformity of deformation. Izv. vys. ucheb. zav.; chern. met. 8 no.7:108-112 '65. (MIRA 18:7)

1. Moskovskiy institut stali i splavov.

L 04637-67 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD/HW/JH
ACC NR: AP6019842 (N) SOURCE CODE: UR/0182/66/000/002/0001/0004

50
B

AUTHORS: Okhrimenko, Ya. M.; Tyurin, V. A.

ORG: none

TITLE: Forging with increased uniformity of deformation /4

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 2, 1966, 1-4

TOPIC TAGS: metal deformation, metal forging, metal forming press, metallurgic machinery, alloy, lead, aluminum forging, alloy / EI617 alloy

ABSTRACT: The effect of different forging block profiles on the strength and homogeneity of forged specimens was studied. The study was carried out on the installation shown schematically in Fig. 1 (see Fig. 1). Three different metal specimens were studied: 1) alloy EI617 and an aluminum alloy, 2) lead specimens, and 3) aluminum specimens at room temperature. The experimental data were treated after the method of Ya. M. Okhrimenko and V. A. Tyurin (Metodika postroyeniya poley mestnoy neravnomernosti deformatsii. Izvestiya vuzov. Chernaya metallurgiya, 1965, No. 7). The experimental results are presented graphically (see Fig. 2). It is concluded that the simultaneous use of contoured and flat forging surfaces insures

UDC: 621.73.032

Card 1/3

L 04637-67

ACC NR: AP6019842

0

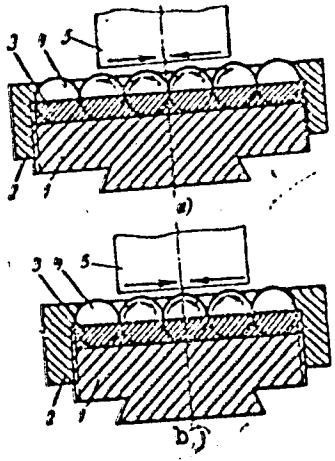


Fig. 1. Experimental instrument. 1 - base; 2 - yoke; 3 - filler; 4 - balls; 5 - specimen. (Arrows indicate the direction of the friction forces during compression.)

Card 2/3

L 04637-67

ACC NR: AP6019842

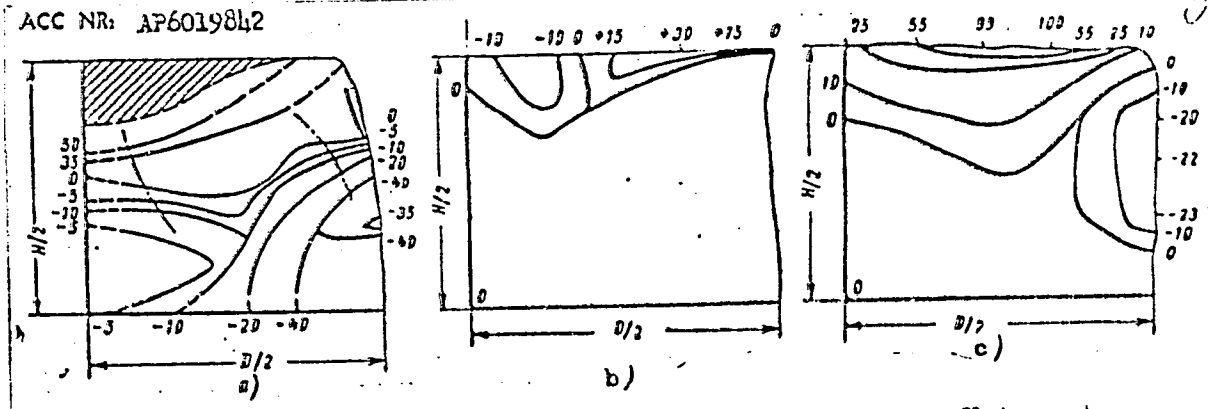


Fig. 2. Topograms of local deformation. a - compression on flat rough plates; b - compression using the instrument with surface projection equal to 0.2 d_t; c - the same with surface projection equal to 0.5 d_t (dashed line indicates the dead zone) where d_t is the ratio of the height of the surface projections to the diameter of the specimen.

nearly homogeneous deformations. Orig. art. has: 6 graphs.

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

awm

Card 3/3

BOKSERMAN, Yu.I.; ZAREMBO, K.S.; OKHRIMENKO, Ya.P.

Studying the corrosion of inside surfaces of steel pipes for gas pipelines. Trudy VNIIGAZ no.5:304-322 '59. (MIRA 12:9)

(Pipe, Steel) (Corrosion and anticorrosives)

ZARUBO, K.S.; TUMANOVA, A.A.; OKHRIMENKO, Ye.P.

Studying the process of obtaining oil fogs for anticorrosion protection of inside surfaces of pipes for gas pipelines. Trudy VNIIGAZ no.5:323-337 '59. (MIRA 12:9)
(Pipe, Steel) (Corrosion and anticorrosives)

MALEVANSKIY, V.D.; OKHRIMENKO, Ye.P.

Study of a sulfite-polyphenol-sulfite extract for chemical processing of clay muds. Trudy VNNIGAZ no.9:240-254 '60. (MIRA 16:7)
(Oil well drilling fluids)

MALEVANSKIY, V.D.; [illegible]

Investigating the forming of [illegible] with a sulfite-alcohol residue. Trudy VNIIBM no.19/27:144-[illegible] '62. (MIRA 17:8)

Investigating the stabilization of mineralized clay muds with a starch reagent in combination with a sulfite-alcohol residue. Ibid.:151-164.

FEDORENKO, Ye.G., prof., otv. red.; ZAYKO, N.N., prof., zam. otv. red.; OKHRIMENKO, Yu.M., red.; KOLOMIYCHENKO, M.S., zasl. deyatel' nauki Ukr.SSR prof., red.; SHAKHBAZYAN, G.Kh., prof., red.; IVANCHENKO, T.L., prof., red.; GURVICH, S.S., dots., red.; KHAVCHUK, M.I., dots., red.

[Philosophical problems in medicine and biology] Filosofskie voprosy meditsiny i biologii. Kiev, Zdorov'ia, 1965. 255 p. (MIRA 18:10)

1. Kiev. Medychnyi Instytut. 2. Chlen-korrespondent AMN SSSR (for Shakhbazyan).

L 16083-65
ASD(f)-2/ASD(m)-3
ACCESSION NR: AP5003942

AUTHOR: Malyuchkov, [illegible]; Shartkov, A. A.

TITLE: Study of [illegible] (PMR)

SOURCE: Fizika metallov i metallovedeniye, [illegible], no. 2, 1964, 332-334

TOPIC TAGS: titanium [illegible], hydride, titanium hydrogen, hydrogenation, [illegible]

Abstract: The study [illegible] dium (the alloys were [illegible] imeni A. A. Baykov), [illegible] 1 hr at 10^{-4} mm Hg. [illegible] ature. The following [illegible]

$H_{3.71}$; $TiV_{2.10}$ [illegible]

The first derived [illegible] narrow line (1-2 gauss) [illegible] gauss) of titanium hydride [illegible] [illegible] of titanium hydride [illegible]

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L 16083-65
ACCESSION NR: AP5001947

cause of the diffusion of hydrogen into the hydride at room temperature. I
titanium hydride, and protons have fixed positions in the lattice under
conditions.

As the concentration of vanadium in the alloy rises from [illegible] to [illegible]
PMR line width in titanium hydride increases from 15.5 to 21.6 gauss. [illegible]
crease in the hydrogen content of the alloy with 20% vanadium also causes a
broadening of this line. This leads to certain assumptions on the
of hydrogen in the alloy. The increase in the width of the titanium
line, taking place in linear fashion, may be attributed to an increase
hydrogen content of [illegible] as the vanadium concentration in the
changes from 30 to [illegible]. In this case, it appears possible
estimate of the amount of hydrogen in each of the hydrides formed by
the values of the second moments M_2, calculated for titanium hydrides
various H_2 contents with the experimental values of the second moments
possible H_2 content of vanadium hydride could not be determined because
diffusive narrowing of the PMR line.

On the other hand, the broadening of the PMR line of titanium hydride
may be caused by substitution during hydrogenation of Ti-V alloys, of some
the Ti atoms by V atoms, whose nuclei have a large magnetic moment.

In order to obtain more information on the above-described phenomena

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ACCESSION NR: AP5001942

investigations are now being conducted into hydrides of binary alloys whose second component does not form hydrides. Orig. art. has 2 figures and 1 table.

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

SUBMITTED: 14Oct63 ENCL: 00 SUB CODE: MM

NO REF SOV: 002 OTHER: XX JPRS

Card 3/3

OKHRIMETS, I.

Concern for the creation of healthy working conditions. Sov. profsoiuzy 5 no.4:76 Ap '57. (MLRA 10:6)

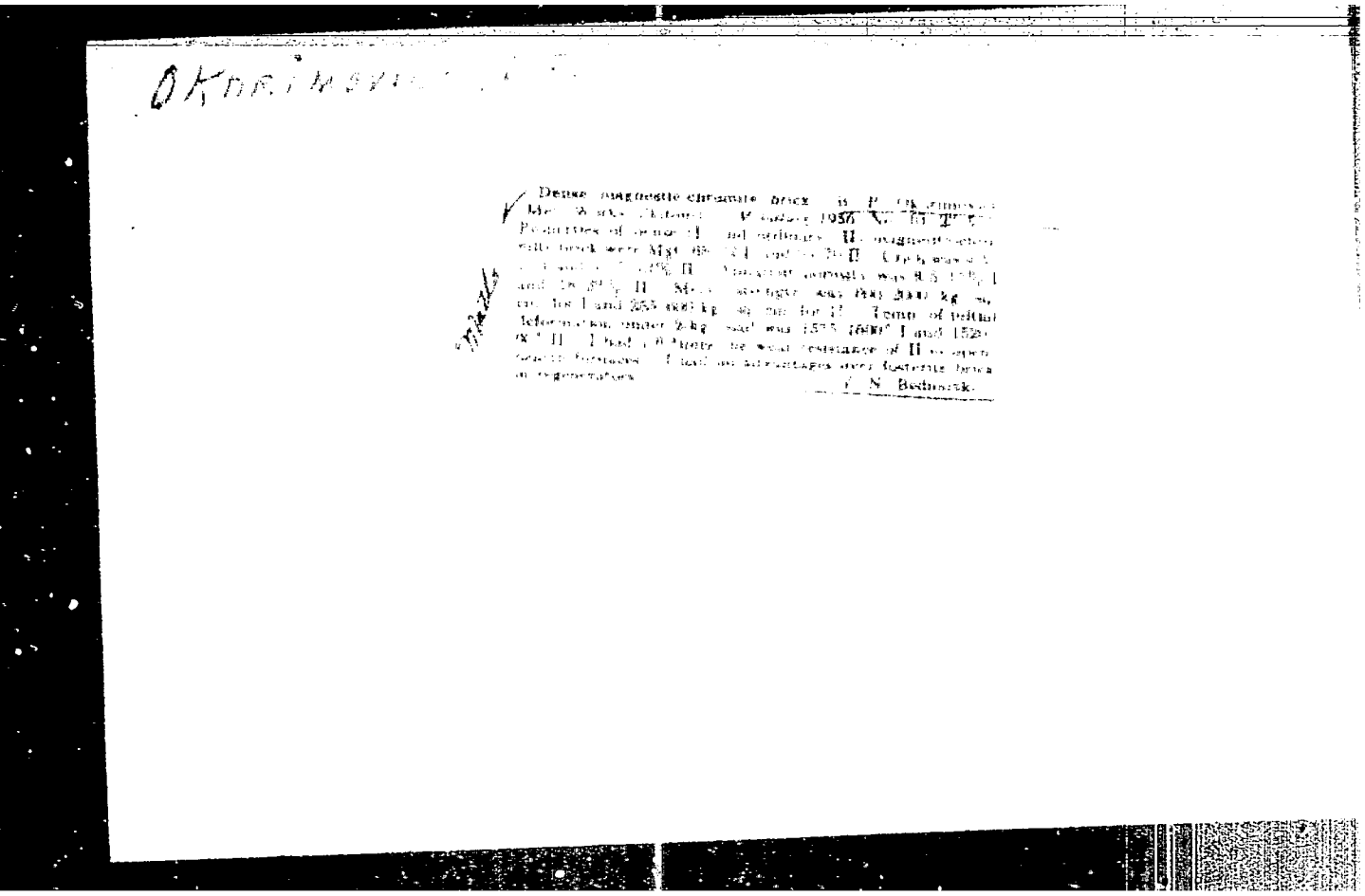
1. Starshiy tekhnicheskiy inspektor Otdela okhrany truda Vsesoyuznogo TSentral'nogo Soveta professional'nykh soyuzov.
(Kiev--Industrial hygiene)

VINOKURSKIY, S.A.; RABINOVICH, N.E.; MILOVIDOV, Ye.A.; OKHRIMETS, V...

Testing of differential recording machines. Nov. med. tekh. no.2:168-170 '64. (MIRA 18:11)

VINOGURSKIY, S.A.; RABIN[illegible], N.E.; [illegible]

Analysis of kinematic errors of [illegible] spygmomanometer. Izm. tekh. no.4:[illegible] Apr 1[illegible].



PA - 2396

AUTHOR: PETROV,A.K., OKHRIMOVICH,B.P., engineers of the Ironworks of ZLATOUST (Zlatoustovskiy metallurgicheskiy zavod).

TITLE: Influence of Hot-Top Configuration on the Macrostructure of Ingot. (Vliyaniye formy pribyl'noy nadstavki na makrostrukturu slitka.Russian)

PERIODICAL: Stal', 1957, Vol 17, Nr 2, pp 130-135 (U.S.S.R.)

Received: 5 / 1957 Reviewed: 5 / 1957

ABSTRACT: The essential reason for the defectiveness of the macrostructure in that part of the ingot that is below the dead head, is the incrustation at the contact point of the ingot with the head piece for the dead head. The nature of these defects and the new construction of the head pieces are described. With the use of these wide head pieces the defects are largely reduced, so that the output of usable steel is increased by about 2% by this construction. Working with these head pieces also does not bring about any transversal cracks but by the contraction strain developing with the cooling process it leads to a disengagement. This makes work easier and accelerates the passing-on of the ingots to the blooming-mill train. (8 tables, 7 illustrations and 4 citations from Slavic literature).

ASSOCIATION: Ironworks of Zlatoust (Zlatoustovskiy metallurgicheskiy zavod).

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress

Card 1/1

Okhrimovich, B.P.

133-2-6/19

AUTHORS: Okhrimovich, B.P. (Engineer), Pribytkov, A.Ye, Uzhen, A.I. and Rumm, P.A.

TITLE: Testing of Unfired Magnesite-Chromite Roof Bricks. (Ispytaniye svodovogo bezobzhigovogo magnezitokhromitovogo kirpicha)

PERIODICAL: Stal', 1958, Nr 2, pp.126-130 (USSR)

ABSTRACT: Testing of the behaviour of unfired magnesite-chromite bricks in roofs of open hearth and electric furnaces is described in some detail. Unfired bricks were made from the same material as fired bricks. The costs of their manufacture is 1.7-2 times lower than that of the fired bricks. Properties of the bricks before and after service and the comparison of the final length after service of fired and unfired bricks are given. On the basis of the results obtained the following conclusions were made: 1) The character of the wear of unfired bricks differs little from that of fired bricks and takes place by steady spalling with the progressing zonality and appearance of breaking stresses. 2) The rate of wear of unfired bricks

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133-2-6/19

Testing of Unfired Magnesite-Chromite Roof Bricks.

in the roof of open hearth furnaces is 1-9% higher than that of fired bricks (in roofs of electric furnaces about twice higher). 3) The use of unfired bricks in roofs is economically expedient except in sectors of maximum wear and for suspension. 4) Further improvement in the quality of unfired bricks is necessary. There are 3 tables and 5 figures.

ASSOCIATION: Zlatoust Metallurgical Works, "Magnezit" Works and Gisogneupor. (Zlatoustovskiy Metallurgicheskiy Zavod, Zavod "Magnezit" i Gisogneupor)

AVAILABLE: Library of Congress.

Card 2/2

KHASIN, G.A.; MENUSHENKOV, P.P.; PETROV, A.K.; OKHRIMOVICH, B.P.; DAVIDYUK, V.N.; FILATOV, S.K.; VASIL'YEV, P.V.; LOKTIONOV, M.V.; GUREVICH, Yu.G.

New method of mold coating with petrolatum. Metallurg 5 no.5:21-24 My '60. (MIRA 14:3)

1. Zlatoustovskiy metallurgicheskiy zavod i Chelyabinskiy politekhnicheskiy institut.
(Ingot molds) (Petrolatum)

S/133/60/000/012/005/015
A054/A027

AUTHORS: Gurevich, Yu. G., Engineer, Rozin, B.B., Engineer, Geyfman, E.S., Engineer, Khazin, G.A., Engineer, and Okhrimovich, B.P., Engineer

TITLE: Pouring 1X18W9T (1Kh18N9T) Type Steel in Ingot Molds Coated with Petrolatum

PERIODICAL: Stal', 1960, No. 12, pp 1096-1098

TEXT: Since 1959, the Zlatoust Metallurgical Plant, when melting the 1Kh18N9T brand steel by bottom casting, has applied petrolatum instead of carbontetrachloride for the "self-coating" of the 2.7 ton ingot molds without changing their form and their weight. In the establishment of the new technology, P.P. Mamzakankov, A.K. Petrov, S.K. Filatov, P.I. Vasil'yev, V.N. Davidyuk, and M.V. Laktionov took part. The smoothness of the ingot surface was assessed by the specific labor spent on removing surface defects from 1 sq m of the metal (by reference to photochronometric observations) and the test results were analyzed by computers. Altogether 472 tests were carried out in the course of which the influence of several factors: temperature, holding time of the metal in the ladle, the velocity of pouring into the ladle, were investigated, for both kinds of coating separately.
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The tests showed that when the 2.7 ton ingot molds were coated with petrolatum (maintaining the conventional technology used for the 1Kh18N9T brand steel in other respects) the surface of the improved and the time required for removing surface defects decreased by 15-30%. As regards the time required for defects removal, the following data were obtained in two shops:

A/

Temperature:	< 1,550°C	1,560-1,600°C	> 1,600°C
with petrolatum coating, min/m²	40.1	51.0	88.7
with CCl_4 coating "	77.5	66.0	68.9
B/			
with petrolatum coating, min/m²	100.8	100.9	113.0
with CCl_4 coating "	117.1	134.0	148.7

These figures show that petrolatum coating is superior to CCl_4 coating under 1,600°C. The relationship between the quantity of metal to be subsequently scoured and the time of pouring into the ladles coated with petrolatum was also investigated and it was found that if the pouring time was under 2 minutes, 40 and 71% of the metal had to be subsequently scoured, if between 2-3 minutes:
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26.0-55.5% and above 3 minutes: 0.0- 31.8% (the first figures stand for Shop A, the second for Shop B). These data show that if the pouring time is shorter the ingot surface deteriorates rather suddenly, which can also be proved by the defects removal times in function of pouring time:

Pouring time, min	< 2	2-3	> 3
Average cleaning time, min/m²			
shop A			
with petrolatum coating	60.4	46.9	35.5
with CCl_4 coating	78.0	75.5	45.7
shop B			
with petrolatum coating	116.0	109.2	95.0
with CCl_4 coating	139.0	145.4	112.0

Thus, when pouring time is longer than 2 minutes, the labor required for cleaning the ingot surface decreases by 25%. Tests carried out on the same subject in roll shops yielded analogous results. There are 3 figures and 4 Soviet references.

ASSOCIATION: Zlatoustovskiy metallurgicheskiy zavod (Zlatoust Metallurgical Plant), Chelyabinskiy politekhnicheskiy institut (Chelyabinsk Polytechnical Institute).
Card 3/3

[illegible]/000/002/002/004
[illegible]-61

AUTHORS: Okhrimovich, B. P., Tishkov, Yu. Ya., [illegible]ilevskiy, P. A., Pasyuk, N. I.

TITLE: New ramming method for hearths of steel furnaces

PERIODICAL: Ogneupory, no. 2, 1962, 61-65

TEXT: Results of experimental and industrial research are given and suggestions are made for repairing rammed bottoms of open hearths and electric steel furnaces by dry magnesite powder. The parameters suited best for the production of rammed hearths of maximum durability were determined in the laboratory. Powdered magnesite of the zavod "Magnezit" ("Magnezit" Plant) was used to study the effects of the grain composition of magnesite powder, thickness of the rammed layer, ramming time and techniques, binding agents, sintering additives, and powder humidity. Since July 1960, experiments of repairing hearths in cold state by pneumatic ramming of dry magnesite powder have been conducted in the steel works of the Zlatoustovskiy metallurgicheskiy zavod (Zlatoust foundry). For repairing hearths in hot state, МПМ(MPM) or МПК(MPK) powders are

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New ramming method for hearths ... S/131/62/000/002/002/004
B105/B101

molten on to the walls and vaults. To increase the durability of hearths of steel furnaces especially when melting high-quality steels, the former are produced by ramming dry magnesite powder with a minimum content of 88% MgO. The greatest density of the working layer of hearths is obtained by using magnesite powders with a 65-75% content of the 4-0.1 mm fraction, 35-25% of a fraction < 0.1 mm including 25-15% < 0.06 mm. To improve the hearth density without a considerable reduction in refractoriness, up to 5% of titanomagnetite concentrate is added. Ramming and repairing hearths with dry magnesite powder increases their durability considerably and reduces the time of waiting and the consumption of magnesite powder and fuels. To promote the application of the new technique, the production of magnesite powder of the required grain composition will have to be applied, in the "Magnezit" plant. There are 3 tables and 3 Soviet references.

ASSOCIATION: Zlatoustovskiy metallurgicheskiy zavod (Zlatoust Foundry) (Okhrimovich, D. P., Tishkov, Yu. Ya.); Institut ogneuporov v. g. Satke (Institute of Refractories in Satka) (Vasilevskiy, P. A., Pasyuk, K. I.)

Card 2/2

KHASIN, Gersh Aronovich; OKHRIMOVICH, Boris Pavlovich; DAVIDYUK, Viktor nikolayevich; ROZIN, Bentsian Borisovich; GEYFMAN, Roma Samuilovich; MIKHAYLOVA, Ye.P., red.izd-va; OBUKHOVSKAYA, G.P., tekhn. red.

[Pouring of alloyed steel with the use of petrolatum]Razlivka legirovannoi stali s petrolatumom. Moskva, Metallurgizdat, 1963. 44 p. (MIRA 16:3)
(Steel ingots) (Metalworking lubricants)

TISHCHENKO, O.I.; OKHRIMOVICH, B.P.; TISHKOV, Yu.Ya.; KULAKOV, I.I.; KHRUSTAL'KOV, L.A.; VASILEVSKIY, P.A.; PASYUK, K.I.

New method of building arc furnace hearths. Metallurg 8 no.2:15-17 F '63. (MIRA 16:2)

1. Zlatoustovskiy metallurgicheskiy zavod i Chelyabinskiy institut ogneuporov.
(Electric furnaces—Design and construction)

LEVENETS, N.P.; SAMARIN, A.M.; SEMIKIN, I.D.; KAZAKOV, V.E.; BUMBINEK, Ye.I.; PANYUKHNO, L.G.; SVINOLOBOV, N.P.; AVERIN, S.I.; SMIRNOV, V.M.; ZELENSKIY, V.D.; LAYKO, B.G.; TISHCHENKO, O.I.; OKHRIMOVICH, B.P.; DANILOV, A.M.; TISHKOV, Yu.Ya.; PANOV, M.A.; MARKELOV, A.I.; PETROV, A.K.; VASILEVSKIY, P.A.; PASYUK, K.I.; NESTEROV, V.I.; KHRUSTAL'KOV, L.A.; GLAZKOV, V.S.; MAKAGON, V.G.; FOMIN, G.G.; TRISHCHENKO, V.D.; KORZH, V.P.; SUYAROV, D.I.; ARSEYEV, A.V.; PAVLYUCHENKO, A.A.; ZHADAYEV, V.G.; KONDORSKIY, R.I.; MOROZOVA, I.A.; KOCHETOV, V.V.; PRUZHINER, V.L.; MALEVICH, I.A.; MALIOVANOV, D.I.; ZAKOVRYASHIN, I.I.; NOVSKIY, I.S.; NOVIKOVA, V.P.; GRISHIN, K.N.; MOSKOVSKAYA, M.L.; KORNEYEV, B.M.

Inventions. Met. i gornorud. prom. no.3:75-76 My-Je '64.
(MIRA 17:10)

BR

ACCESSION NR: AP4040388 S/0133/64/000/006/0540/0544

AUTHORS: Okhrimovich, B. P. (Engineer); Tishchenko, O. I. (Engineer); Filatov, S. I. (Engineer); Kolyasnikova, R. I. (Engineer); Gurevich, Yu. O. (Candidate of technical sciences)

TITLE: Dark crust in the macrostructure of stainless heat resistant alloyed structural steels

SOURCE: Stal', no. 6, 1964, 540-544

TOPIC TAGS: steel, stainless steel, heat resistant steel, crust formation, steel 13Kh12NVMFA, steel 13Kh11NVFRA, steel 20Kh15N3MA, steel Kh17N2, steel 4Kh9S2, steel Kh28, steel Kh17, steel Kh25, structural steel 18KhNVA, structural steel 15KhGNTA, structural steel 18KhNT, structural steel 40KhNMA

ABSTRACT: This study is a continuation of a previous investigation on the nature of dark crusts common on stainless heat-resistant steels of the types 13Kh12NVMFA, 13Kh11NVFRA, 20Kh15N3MA, Kh17N2, Kh17, Kh25, 4Kh9S2, Kh28 and on the alloyed structural steels 18KhNVA, 15KhGNTA, 18KhNT, 40KhNMA. The investigation consisted of metallographic analysis of samples cut from "healthy" and from defective sections of ingots, and the comparison of their compositions and structures. Metal-

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ACCESSION NR: AP4040388

lographic study showed that defective sections were richer in carbon, aluminum, and aluminum oxides. Large silicate inclusions of complex composition with multiple aluminate inclusions were found to be distributed regularly in the direction of deformation. Corundum represented the basic part of the precipitate and occurred in the form of transparent colorless grains (N_g = 1.767). Spinel and titanium were less common. The precipitate also contained colored anisotropic inclusions with N_g = 1.775. The experiments revealed that the dark crust originated in the deadhead zone and penetrated the body of casts during the crystallization period. Defects caused by crust formation were eliminated by preventing the chipping of the crust and its subsequent sinking into the metal. This was achieved by decreasing the heat of flux by sprinkling lunkerite 20, vermiculite powder, or chamotte over the ingots (2 kg per ton of metal). Orig. art. has: 1 table, 6 figures, and 1 formulas.

ASSOCIATION: Zlatoustovskiy metallurgicheskiy zavod i Chelyabinskiy politekhnicheskiy institut (Zlatoust Metallurgical Plant and Chelyabinsk Polytechnic Institute)

SUBMITTED: 00 DATE ACQ: 24Jun64 ENCL: 00

SUB CODE: MM NO REF SOV: 015 OTHER: 000

Card 2/2

OKHRIMOVICH, S.

Ruler and ink. Sov.foto 20 no.6:35 Je '60. (MIRA 13:7)
(Motion pictures--Editing)

CHEL'CHENKO, V.T.; DOLINSKIY, Yu.M.; OKHRIMOVICH, Ye.V.

Automatic quick-break switch of direct current for 3,000 ampere and 4,000 volt. Biul.tekh.-ekon.inform. Gos.nauch.-issl.inst.nauch.i tekh.inform. no.9:47-48 '62. (MIRA 15:9)

(Electric switchgear)

OKHRIMYUK, T.M.

All-Union census. Mech.transp. 18 no.1:18-19 Ja '59.
(MIRA 12:2)
(Russia--Census)

OKHRYMEIDA, M.P.

[The propagation of ornamental shrubbery and the cultivation of roses in exposed and protected soil] Razmnazhenne dekaratyunykh kustarnikau i kul'tura ruzh u adkrytym i zakrytym gruntse. Minsk, Dziarzh. vyd. BSSR, Redak. sel'skagaspadarchai lit. 1952. 41 p. illus. 20 cm. (MLRA 10:4)
(Plant propagation) (Plants, Ornamental)

[redacted], I.S .

"

"Vulcanization of rubber under very high pressure," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jan-2 Feb 57, Moscow, Rubber Research Inst.

B-3,084,395

SKOMOROKHA, V.N., inzh.; OKHTEMENKO, L.V., inzh.

Mechanized-part painting shop. Mashinostroenie no.3:73-74 My-Je '63. (MIRA 16:7)

1. Sumskiy zavod elektronnykh mikroskopov i elektroavtomatiki.
(Paint shops)