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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961410001-8"

VYDRIN, V.N. ; DMITRIYEV, V.P.

Geological characteristics of the Zmeinogorsk ore-bearing area (Rudnyy-Altai). Geol.rud. mestorozh. no.6:46-60 N-D '61. (MIRA 14:3)

1. Moskoviskiy gosudarstvennyy universitet, Zapadnosibirskoye geologicheskoye upravleniye.
(Altai Mountains—Geology, Economic)

VYDRIN, V.N., kand.tekhn. nauk.

Energy theory of plastic deformation in connection with the equation of plasticity. Sbor. st. CHPI no.11:111-126 '57.
(Deformations (Mechanics)) (MIRA 11:4)

VYDRIN, V.N., kand. tekhn. nauk.

Connection between displacements and stresses during plastic deformations. Sbor. st. CHPI no.11:127-131 '57. (MIRA 11:4)
(Deformations (Mechanics))

VYDRIN, V.N.

PHASE I BOOK EXPLOITATION SOV/3226

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

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

Sponsoring Agencies: Leningradskiy politekhnicheskiy institut im. M.I. Kalinina, Nauchno-tekhnicheskoye obshchestvo mashinostroiteley, Leningradskoye otdeleniye, and Nauchno-tekhnicheskoye obshchestvo metallurgov, Leningradskoye otdeleniye.

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

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

COVERAGE: The articles of this collection cover various theoretical and practical problems of rolling, such as: pressure, spread, efficiency of rolls, determination of deformation, forces required, pass design, optimum conditions for rolling, experiences of various plants, modernization of equipment, aluminum-clad steel, and rolling of nonferrous metals. No personalities are mentioned. References appear after each article.

VYDRIN, V.N.

Geological structure of the Trepca lead-zinc deposit in Yugoslavia [with summary in English]. Sov. geol. 1 no.6:157-174 Je '58. (MIRA 11:10)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Trepca region, Yugoslavia--Geology, Structural)
(Yugoslavia--Ore deposits)

SOV/137-59-1-1552

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 207 (USSR)

AUTHOR: Vydrin, V. N.

TITLE: On the Work of Friction During Rolling (O rabote treniya pri prokatke)

PERIODICAL: Sb. statey. Chelyab. politekhn. in-t, 1958, Nr 8, pp 58-65

ABSTRACT: The author criticizes the formulae developed by Vereshchagin, Petrov, Bayukov, and Chekmarev for the purpose of calculating the work against friction (Fr) forces (F). Starting from the assumption that the specific pressures are distributed uniformly along the arc of contact, the author derives a formula for the relative slipping of metal over the rolls and for the work done against the Fr F's in the lag and the lead zones, as well as in the entire contact area. The magnitude of the Fr is determined. A number of curves are given representing the work done against the Fr F's as a function of the critical angle γ at various coefficients of Fr and under particular conditions of rolling; under conditions when the coefficient of Fr is > 0.1, the work done against Fr accounts for the greater portion of energy losses. A computation of the effect of spread on the work done against Fr is given. The total work consumed during rolling is defined as the sum

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SOV/137-59-1-1552

On the Work of Friction During Rolling

of the work done against Fr and the work of deformation.

P. G.

Card 2/2

25(2) SOV/148-59-1-16/19

AUTHOR: Vydrin, V.N., Candidate of Technical Sciences

TITLE: Computation of the High-Speed Rate and Capacity of Reversing Mills (K raschëtu skorostnykh rezhimov i proizvoditel'nosti reversivnykh stanov)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - Chernaya metallurgiya, 1959, Nr 1, pp 135-143 (USSR)

ABSTRACT: A new method of computing the working rate of reversing mills is presented which is based on the graphical interpretation of the rolling process in such mills, and on the main principle that the areas of portions of the graph (Figure 1) corresponding to the machining time are directly proportional to the length of the rolled strip. The correctness of this principle which was first developed by A.I. Tselikov [Ref 2], is confirmed and basic problems of rolling on reversing mills are analyzed with the use of the proposed method. Formulas are given to calculate the machining time of the pass, duration of the cycle of roll revolution and the optimum ratio for the rates of the grasp and release of the strip. Computation of the machine capacity is facilitated by the following formula,

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SOV/148-59-1-16/19

Computation of the High-Speed Rate and Capacity of Reversing Mills

determining the duration of the cycle:

$$t_{ц} = \frac{1}{n_{п}} \left(\frac{60}{\pi} \cdot \frac{L}{D} + \frac{n_{п}^2 + n_{з}^2}{2a} + \frac{n_{п}^2 + n_{в}^2}{2b} \right)$$

where $t_{ц}$ is the duration of cycle; $n_{п}$ is the constant rate of rolling; $n_{з}$ is the rate at the gripping; $n_{в}$ is the rate at the release; a is the acceleration of the rolls; and b is the retardation of the rolls; L is the strip length and D is the diameter of rolls.

There are 6 diagrams and 4 Soviet references.

ASSOCIATION: Chelyabinskiy politekhnicheskiy institut (Chelyabinsk Polytechnical Institute)

SUBMITTED: December 25, 1958

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SOV/137-59-3-6741

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 257 (USSR)

AUTHOR: Vydrin, V. N.

TITLE: Work and Power Considerations for Rolling Operations (Rabota i moshchnost' prokatki)

PERIODICAL: Sb. statey Chelyab. politekhn. in-t, 1958, Nr 8, pp 66-75

ABSTRACT: The well-known Fink formula for the determination of the power (P) of rolling (R) cannot be considered sufficiently accurate because it fails to take into consideration the fact that the P of R is a function of the magnitude of the critical angle γ, i.e., of the forward slip, and because it completely disregards the effect of spread in the strip. Data of an investigation were employed in deriving formulas for the displaced volume of metal, the quantity of work, and the P of R, due allowances being made for the phenomena of spread and forward slip of the strip; an analysis of the effect of the individual factors on the P of R is also given. The formulas derived have the following form: The volume displaced per unit of time $V_c = \omega_\gamma \cos\gamma\, vt \cdot \log_e h_o/h_1$, the work of R, $A = p_c \omega_\gamma \cos\gamma\, vt \log_e h_o/h_1$, the P of R, $N = p_c \omega_\gamma \cos\gamma\, v \log_e h_o/h_1$, where p_c is the total resistance to

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deformation (mean value); ω_γ the area of the strip at the critical cross section; h_o the initial height of the strip; h_1 the final height of the strip; v the peripheral velocity of the rolls; t the time required for R of the strip; and γ the critical angle. These formulas may be employed in the determination of the work and the P of R of any structural shapes. They also make it possible to establish by which factors and to what extent the P of R is affected. It follows from the last formula that an increase in the forward slip results in all instances in an increased P of R. This may be explained by the fact that as the angle γ is increased, the area ω_γ [Transl. Note: Russian original reads ϵ_γ] becomes greater and, as a result, the quantity of metal being drawn into the rolls (where it is reduced) per unit time is also increased. Essentially, the effect of spread manifests itself in the fact that as its intensity is increased the area of the critical cross section ω_γ increases together with the amount of metal deformed in one second. As the diameter of the rolls is made larger, the length and, consequently, the volume of the contact area is increased. Under conditions of constant relative reduction h_o/h_1, this results in an increased volume of metal displaced as well as in an increased P of R. The P of R increases also with increasing thickness h_1 of the strip. The physical meaning of this regularity in behavior lies in the fact that, while the volume of the contact area increases as the h_1 is increased, the $\log_e h_o/h_1$ grows

SOV/137-59-3-6741

Work and Power Considerations for Rolling Operations

smaller but at a considerably slower rate. As a result, both the displaced volume and the P of R become greater.

G. L.

Card 3/3

AUTHORS: Vydrin, V.N., Amosov, P.N., Kossovskiy, L.D. 32-1-35/55

TITLE: A Method of Determining the Wear of Rolling Shafts (Metod opredeleniya iznosa prokatnykh valkov).

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 1, pp. 88-89 (USSR)
[illegible]

ABSTRACT: In this paper a new method of determining the wear of grooves of rolling shafts is recommended. For this purpose two works templates were rivetted together in such a manner that a distance of 6-8 mm remained between them. On the surface of one of the templates lines were drawn symmetrically and parallel to the axis of the template, after which they both received a coating of paint. In the inner diameter of the grooved part of the roll a layer of "plastiline" was applied in such a manner that it filled the grooved profile at one part of the shaft, so that it was located 3-4 mm higher. At this point the aforementioned double template was pressed in in the direction of the axis of the shaft. The "plastiline" entered the space between the two templates. The double template was then removed from the shaft and was filled with "plastiline". The extend to which this filling protruded beyond the edges of the templates determined the degree of wear of

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the grooved internal diameter of the roll, which could then be measured according to the photos taken of this protruding part or immediately by means of the ocular microscope "МБС-1". There is 1 figure.

ASSOCIATION: Chelyabinsk Polytechnic Institute and Chelyabinsk Metallurgic Works (Chelyabinskiy politekhnicheskiy institut i Chelyabinskiy metallurgicheskiy zavod).

AVAILABLE: Library of Congress

Card 2/2 1. Shafts-Test methods 2. Shafts-Test results

VYDRIN, V.N., kand.tekhn.nauk

Friction work during the rolling. Sbor.st.CHPI no.8:58-65 '58. (MIRA 11:9)

(Rolling (Metalwork)) (Friction)

SOV/137-58-12-24411

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 12, p 66 (USSR)

AUTHOR: Vydrin, V. N.

TITLE: Rolling in Rolls of Unequal Diameter (Prokatka v valkakh neravnogo diametra)

PERIODICAL: Tr. Mezhvuz. nauchno-tekhn. konferentsii na temu: "Sovrem. dostizh. prokatn. pro.z-va". Leningrad, 1958, pp 71-77

ABSTRACT: Proceeding from the equation for the energy balance of asymmetrical rolling, an equation is derived for the critical angles of the larger and smaller rolls: $\gamma_б = 1/2\ [A-(1-k)h_1/AR_б]$: $\gamma_M \leq 1/2k\ [A+(1-k)h_1/AR_б]$, where $k=R_M/R_б$ and the value of $A=\alpha_б\ [1-\alpha_б\ (1+k)/2f2k]$. The inequality of the roll diameters is responsible for the special features of the conditions of rolling. For example, it is always the roll of larger diameter that starts to slip first. The conditions for skidding will be met when $A \leq \sqrt{(1-k)h_1/R_б}$, but rolling will continue, as there is an unutilized reserve of forces of friction in the zone of forward slip of the roll of smaller diameter. Rolls of smaller diameter start to be friction driven at $\gamma_M \geq \alpha_M/2$.

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SOV/137-58-12-24411

Rolling in Rolls of Unequal Diameter (cont.)

The operating conditions of pinion rolls depend upon the roll to which the moment of torque of the motor is transmitted directly and upon the conditions of rolling, while the operating conditions of the connecting details depend upon the conditions of rolling.

Ya. G.

Card 2/2

VYDRIN, V.N., kand.tekhn.nauk

Effect of strip tightening on the forward flow in rolling. Sbor.st. CHPI no.8:133-143 '58. (MIRA 11:9)

(Rolling (Metalwork))

SOV/163-59-1-22/50

18(5)

AUTHOR: Vydrin, V. N.

TITLE: Deformation of Hollow Cylindrical Bodies (Deformatsiya polykh tsilindricheskikh tel)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 1, pp 113 - 118 (USSR)

ABSTRACT: With the help of the theory of plasticity based upon energy conceptions, the principles of which have been exposed by the author in another paper (Ref 1), and of which a short summary is given in this article, a solution of the problems connected with the deformation of hollow cylindrical bodies is presented. The fundamental formula (20) for the deformation of such bodies is obtained in its final shape. This formula covers all stressed states possible in deformation. From this equation (20) formulas were obtained for calculating the most common kinds of deformation. They are either new, or they are an improvement of existing solutions. The results obtained are not in contradiction with existing solutions but do in special cases base upon them. As is shown in this paper

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Deformation of Hollow Cylindrical Bodies SOV/163-59-1-22/50

the magnitude of deformation forces depends upon the state of plastic flow of the metal. There are 2 figures and 2 Soviet references.

ASSOCIATION: Chelyabinskiy politekhnicheskiy institut (Chelyabinsk Polytechnical Institute)

SUBMITTED: May 23, 1958

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SOV/163-59-1-23/50

18(5)

AUTHOR: Vydrin, V. N.

TITLE: Distortions and Forces in the Deformation of Hollow Cylindrical Bodies (Formoizmeneniye i usiliya pri deformatsii polykh tsilindricheskikh tel)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 1, pp 119 - 125 (USSR)

ABSTRACT: In a previous paper by the same author (Ref 1) it was shown that in drawing tubes the magnitude of forces required for plastic deformation is usually dependent upon the behaviour of the metal in the state of plastic flow. The problem approached in this paper is that of determining the distorted shape of the body for given attack forces and dimensions. Proceeding from the theory of plastic deformation (Refs 1,2) the fundamental questions of the distortion and deformation of hollow cylindrical bodies are investigated. Formula (4) is derived for the case where the tube is subjected to a radial pressure p_b from outside, to a pressure p_a from inside

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and an axial thrust p_z. According to this formula the state of plastic flow of the metal may be described. A number of special cases are investigated and the corresponding formulas are therefore derived from formula (4). 1) The tube is closed on either end, the external pressure being equal to the thrust ($p_b=p_z$). 2) The tube is only subjected to an external pressure p_b. 3) It is only subjected to internal pressure. 4) The tube is deformed by axial thrust P. 5) Stretching and upsetting of the tubes in an axial direction: $p_b=p_a=0$. 6) Drawing of the tubes without a drawing mandrel. This includes a solution of the problem concerning the change of tube wall thickness in drawing without drawing mandrel. The relationships obtained permit to determine the forces required for the plastic deformation of hollow cylindrical bodies for arbitrary load states and the modifications of the dimensions. The results obtained are verified by the existing experimental information. There are 4 figures and 5 Soviet references.

Distortions and Forces in the Deformation of Hollow Cylindrical Bodies SOV/163-59-1-23/50

ASSOCIATION: Chelyabinskiy politekhnicheskiy institut (Chelyabinsk Polytechnical Institute)

SUBMITTED: May 23, 1958

Card 3/3

VYDRIN, V.N., kand.tekhn.nauk

Calculating high-speed rolling and the output of reversing mills. Izv.vys.ucheb.zav.; chern.met. 2 no.1:135-143 Ja '59. (MIRA 12:4)

1. Chelyabinskiy politekhnicheskiy institut.
(Rolling (Metalwork)) (Mechanics, Analytic)

YAKOVLEV, G.F.; VYIRIN, V.N.

Structural characteristics of the distribution of complex ore deposits in Zmeinogorsk District (Rudnyy Altai). Izv. vys.ucheb.zav.; geol.i razv. 2 no.10:48-63 O '59. (MIRA 13:6)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova. (Zmeinogorsk District—Ore deposits)

VYDRIN, V.N.

25(1) PHASE I BOOK EXPLOITATION SOV/2505

Chelyabinsk. Politekhnicheskiy institut

Voprosy teorii i praktiki obrabotki metallov davleniyem (Problems in the Theory and Practice of Metal Forming) Moscow, Mashgiz, 1959. 105 p. (Series: Its: [Sbornik] vyp. 14) Errata slip inserted. 5,000 copies printed.

Reviewers: V.N. Shmurygin, Candidate of Technical Sciences, V.G. Belakin, Engineer, N.A. Bedin, V.A. Korshunov, I. I. Kozhinskiy, L.A. Kritsshteyn, B. N. Malyarovskiy, M.A. Shubik, and D. I. Fishman; Ed.: V.N. Vydrina, Candidate of Technical Sciences; Exec. Ed. (Ural-Siberian Division, Mashgiz): A.V. Kaletina, Engineer; Tech. Ed.: N.A. Dugina.

PURPOSE: The collection of articles is intended for engineers, technicians, and scientific workers in metal forming.

COVERAGE: This collection of articles, written by staff members of the Chelyabinskiy politekhnicheskiy institut (Chelyabinsk Polytechnical Institute), deals with problems on the theory, processes, and equipment of metal forming. Problems in change of shape and state of stress of parallelepipeds and cylindrical bodies subjected to flattening in plane parallel forging heads are discussed. The essentials of the theory of the interaction between strip and roll, and the question of slip along contact surfaces during rolling are explained. An analytic method for the kinematic design of steam-distribution mechanisms for steam hammers is presented. Precision stamping of thin-walled parts of intricate shape is described. An investigation of the function of repeaters in in-tandem rolling mills is discussed. An article on the testing of electric heating furnaces is also included. No personalities are mentioned. References follow several of the articles.

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25(1) PHASE I BOOK EXPLOITATION SOV/2305

Chelyabinsk. Politekhnicheskiy institut

Voprosy teorii i praktiki obrabotki metallov davleniyem (Problems in the Theory and Practice of Metal Forming) Moscow, Mashgiz, 1959. 105 p. (Series: Its: [Sbornik] vyp. 14) Errata slip inserted. 5,000 copies printed.

Reviewers: V.B. Skornyakov, Candidate of Technical Sciences, V.G. Belakin, Engineer, N.A. Bedin, V.A. Korshunov, I. I. Kozhinskiy, L.A. Kritsahte ;, B. N. Malyarovskiy, M.A. Shubik, and D. I. Fishman; Ed.: V.N. Vydrin, Candidate of Technical Sciences; Exec. Ed. (Ural-Siberian Division, Mash[illegible]): A.V. Kaletina, Engineer; Tech. Ed.: N.A. Dugina.

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Problems in change of shape and state of stress of parallelepipeds and cylindrical bodies subjected to flattening in plane parallel forging heads are discussed. The essentials of the theory of the interaction between strip and roll, and the question of slip along contact surfaces during rolling are explained. An analytic method for the kinematic design of steam-distribution mechanisms for steam hammers is presented. Precision stamping of thin-walled parts of intricate shape is described. An investigation of the function of repeaters in in-tandem rolling mills is discussed. An article on the testing of electric heating furnaces is also included. No personalities are mentioned. References follow several of the articles.

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VYDRIN, V.N., kand.tekhn.nauk; BOYKO, M.Ye., inzh.; AMOSOV, P.N., inzh.;
BOYKO, M.Ye., inzh.; AMOSOV, P.N., inzh.; MOSHKIN, S.I., inzh.

Investigating the fluctaution of pull on continuous small section mills. Izv.vys.ucheb.zav.; chern.met. 2 no.6:37-42 Je '59. (MIRA 13:1)

1. Chelyabinskiy politekhnicheskiy institut i Chelyabinskiy metallurgicheskiy zavod. Rekomendovano kafedroy obrabotki metallov davleniyem Chelyabinskogo politekhnicheskogo instituta.
(Rolling (Metalwork))

VYDRIN, V.N., kand. tekhn. nauk

[redacted]

Physical substance of forward flow. Sbor. st. CHPI no.14:63-69 '59. (MIRA 12:8)

(Rolling (Metalwork))

VYDRIN, V.N., kand. tekhn. nauk

Effect of spread on the strip slipping during the rolling process. Sbor. st. CHPI no.14:70-75 '59. (MIRA 12:9)
(Rolling (Metalwork))

VYDRIN, V.N., kand. tekhn. nauk; AMOSOV, P.N., inzh.; TISHCHENKO, O.I., inzh.

Investigating the performance of guide systems on small section mills. Sbor. st. CHPI no.14:91-100 '59. (MIRA 12:9)

(Rolling mills)

TARNOVSKIY, Iosif Yakovlevich; POZDEYEV, Aleksandr Aleksandrovich; GANAGO, Oleg Aleksandrovich; UNKSOV, Ye.P., prof., doktor tekhn. nauk, retsenzent; VYDRIN, V.N., dotsent, kand.tekhn.nauk, red.; YERMAKOV, N.P., tekhn.red.

[Deformations and forces in press forging of metals] Deformatsii i usiliia pri obrabotke metallov davleniem. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 303 p. (MIRA 12:12)
(Forging machinery) (Deformations (Mechanics))

VYDRIN, V.N.

Sequence in the formation of intrusive rocks and ore formation site in the Zmeinogorsk (Korbalikhinskoye) ore deposit (Rudynyy Altai). Biul. MOIP. Otd. geol. 34 no.6:139-140 N-D '59. (MIRA 14:3)

(Altai Mountains—Ore deposits)

(Rocks, Igneous)

PHASE I BOOK EXPLOITATION SOV/4319

Vydrin, Vladimir Nikolayevich

Dinamika prokatnykh stanov (Dynamics of Rolling Mills) Sverdlovsk, Metallurgizdat, 1960. 255 p. 3,350 copies printed.

Ed.: V.B. Lyashkov; Ed. of Publishing House: A.P. Skorobogacheva; Tech. Ed.: Ye.D. Turkina.

PURPOSE: The book is intended for process engineers and designers engaged in rolling. It may also be useful to scientific workers and students studying rolling processes.

COVERAGE: The author discusses problems of the dynamics and kinematics of various types of rolling mills (including continuous mills) on the basis of an investigation of the processes taking place in the contact area, and a study of the special features of the mechanical equipment and main drives. The solution of the problems of dynamics and kinematics is based on the principle of the conservation of energy in the contact area. Formulas are derived for the calculation of torque, the power consumed in rolling, and distribution of the load between the rolls and

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S/137/61/000/007/011/072
A060/A101

AUTHOR: Vydrin, V. N.

TITLE: Theoretical principles of continuous rolling

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1961, 2, abstract 7D10 ("Tr. Konferentsii Tekhn. progress v tekhnol. prokatn. proiz-va". Sverdlovsk, Metallurgizdat, 1960, 27-28)

TEXT: The continuous rolling mill is considered by the author as a single whole governed by the law of conservation of energy of the system. The author demonstrates mathematically that the total power of the tensile stresses on all portions of the strip is equal to the total power of the reelers of the continuous mill. The result of the investigation yields 1) the velocity schedule of a 5-stand continuous mill ensuring equal relative stretches; 2) the effect of velocity variations of the rolls of one stand and of group variations upon the tension schedule and the motor load of a cold continuous rolling mill; 3) the tensions in various sections of the strip at different instants of the nonsteady-state period of operation of the 5-stand continuous mill; 4) variations in the

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load of the drive of the 5-stand continuous mill during the nonsteady-state period of its operation.

A. Bulanov

[Abstracter's note: Complete translation]

S/137/61/000/007/021/072
A060/A101

AUTHORS: Vydrin, V. N.; Boyko, M. Ye.; Amosov, E. N.; Moshkin, S. E.

TITLE: Investigation of the tension schedule on a continuous light-section mill

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1960, abstract 7D41 ("Tr. Konferentsii: Tekhn. progress v tekhnol. prokatn. proiz-va". Sverdlovsk, Metallurgizdat, 1960, 363-364)

TEXT: The method of tension measurement by means of tension pulley is inapplicable in the section rolling practice, and the authors propose their own method according to which the pressure between the pad of the roll bearing and the bedplate of the rolling stand is measured by a special dynamometer. It is established that the relationship between the tension and the velocity mismatch is linear. See also RZhMet, 1960, no. 4, 7653.

A. Bulanov

[Abstracter's note: Complete translation]

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18.5000

77686
SOV/148-60-1-9/34

AUTHOR: Vydrin, V. N.

TITLE: Application of methods of Calculus of Variations to Working Metals by Forces of Pressure

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, 1960, Nr 1, pp 53-59 (USSR)

ABSTRACT: This is an example of analytical study of upsetting the strip in presence of external parts (not deformed)--rigid ends. In author's previous work various problems of uniform (over volume of the body) deformation were solved by application of the principle of a minimum of full energy of deformation and the law of preservation of energy. During uniform deformation, the mechanism of changing the shape is fully determined by one variable parameter (ν), and the condition of a minimum of full energy of deformation is reduced to the usual condition of a minimum of a function of one

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Application of Methods of Calculus of Variations to Working Metals by Forces of Pressure

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variable (ν). In a more general case, during nonuniform deformation, the conditions of the minimum are found by the methods of theory of variations. The presently studied problem gives a quantitative solution of the effect of rigid ends on the process of deformation. In order to establish the effect of rigid ends as such, it is necessary to exclude the supplementary effect of external friction, that is, to consider upsetting of the strip between well-polished dies with lubrication, when the forces of contact friction can be neglected (in comparison with the work of shape-changing). The author refers to his previous work (V. N. Vydrin, Concerning the Energy Theory of Plastic Deformation in Connection With Equation of Plasticity, Collection, Strength Calcuations of Structural Elements, Mashgiz, 1957; V. N. Vydrin, Regarding the Connection Between Shifting and Stresses During Plastic Deformation, Collection, Strength Calculations of Structural Elements Mashgiz, 1957; V. N. Vydrin, Deformation of Hollow

Card 2/8

Application of Methods of Calculus of Variations to Working Metals by Forces of Pressure

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SOV/148-60-1-9/34

Cylindrical Bodies, Scientific Reports of Higher School, Metallurgy, 1959, Nr 1; V. N. Vydrin, Shape-Changing and Forces During Deformation of Hollow Cylindrical Bodies, Scientific Reports of Higher School, Metallurgy, 1959, Nr 1). The author begins his present work with an equation for the work of shape-changing during plastic deformation:

$$A_{\phi} = \int_V \mu \sqrt{2(\varepsilon_1^2 - \varepsilon_1 \varepsilon_3 + \varepsilon_3^2)}\, dV = \int_V \mu \sqrt{\varepsilon_1^2 + \varepsilon_2^2 + \varepsilon_3^2}\, dV, \qquad (1)$$

where ε_1, ε_2, ε_3 = deformations of elongation in the direction of main axes. The author states that in application to any axes this equation can be written as:

$$A_{\phi} = \int_V \mu \sqrt{\varepsilon_x^2 + \varepsilon_y^2 + \varepsilon_z^2 + \frac{1}{2}(\gamma_{xy}^2 + \gamma_{yz}^2 + \gamma_{zx}^2)}\, dV \qquad (2)$$

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or as:

$$A_{\phi} = \frac{1}{\sqrt{2}} \int_V \tau \Gamma dV, \qquad (3)$$

where Γ = intensity of deformation of shear. If a network of mutually perpendicular lines is drawn on the surface of the strip before upsetting, then, as a result of nonuniform deformation, this network will be distorted. The initially straight lines will bend and will appear as v = v(x,y) and u = u(x,y) (see Fig. 1). These lines, characterizing the absolute shifting of points of the body in the direction of coordinate axes, the author calls the "lines of flow" at the infinitely small upsetting $w_z = -\frac{dh}{h}$. Then it will be easy to determine the deformations in every point of the body and of the whole body.

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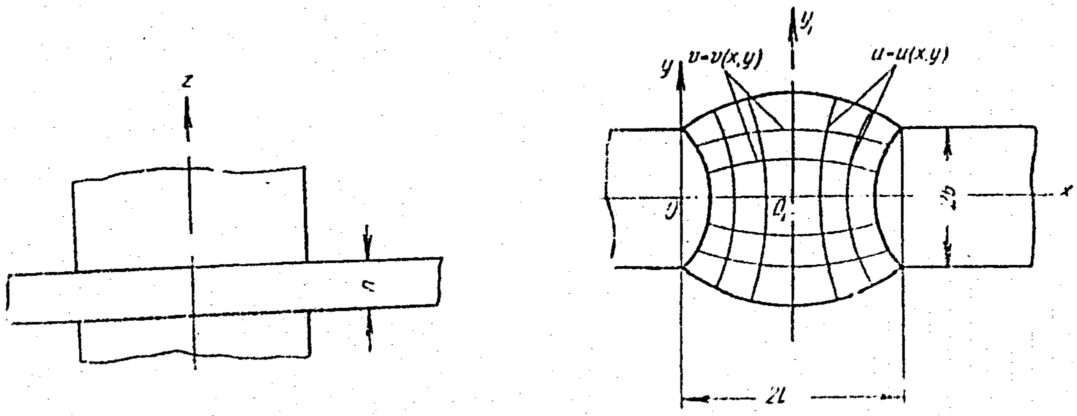

Card 5/8 Fig. 1. Diagram of upsetting the strip with rigid ends.

As a continuation of his previous work on the subject, the author develops 36 new equations. Using the methods of theory of variations, he concludes that the minimum value of the work of shape-changing is materialized with such a mechanism of deformation when the lines of flow are mutually perpendicular. The curves illustrating the effect of the ratio b/l on deformation of the strip are given in Fig. 2. The deformation and widening of the strip at the final upsetting from height h_0 to height h_1 can be obtained by integration. A simplified equation (36) using average value $\frac{\Delta l}{l}$ instead of the variable $\frac{dl}{l}$ is given.

The author states that the problem of deformation of the strip in presence of external friction will be considered in another article. There are 2 figures; and 7 Soviet references.

$$\lambda = \frac{\Delta l}{l} = \left[1 - \frac{2}{3\left(0.5 + 0.102\frac{b_c^2}{l_c^2}\right)}\right] \ln \frac{h_0}{h_1}. \qquad (36)$$

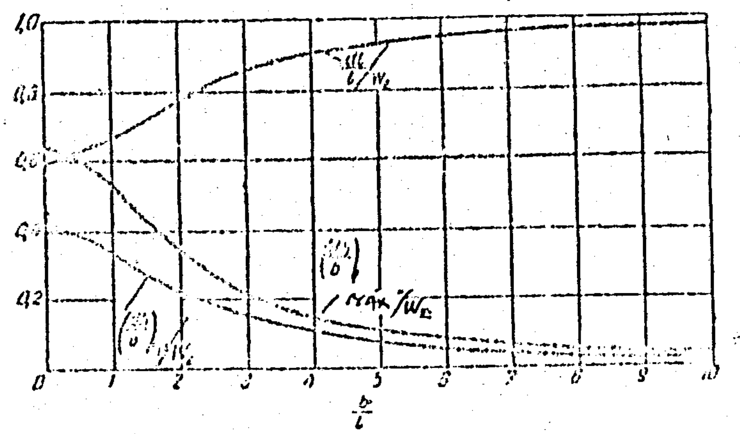

Fig. 2. Effect of shape of region of deformation on deformation of the strip in presence of rigid ends.

Application of Methods of Calculus of Variations to Working Metals by Forces of Pressure

77686
SOV/148-60-1-9/34

ASSOCIATION: Chelyabinsk Polytechnic Institute (Chelyabinskiy politekhnicheskiy institut)

SUBMITTED: September 27, 1958

Card 8/8

1.1500

23175
S/148/60/000/007/022/023/XX
A161/A033

AUTHOR: Vydrin, V. N.

TITLE: Theory of continuous rolling

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 7., 1960, 75 - 81

TEXT: The basic regularities of the continuous strip rolling process are mathematically analyzed considering the stands, strip and electric drive of an integral system under the effect of the energy conservation law. Equations of the strip tension, rolling moment and power, and lead are derived and suggested for use in the analysis and calculation of automatic control systems for continuous rolling mills. The continuous rolling process with tension (with reels) had been discussed in detail in the author's papers (Ref. 1: O vliyanii natyazheniya polosy na operezheniye. Teoriya obrabotki metallov davleniyem (sb. statey) (On the Effect of Strip Tension at Lead. Assembled Articles on the Theory of Pressure Working of Metals), Mashgiz, 1958) and the strip deformation power and friction power on the contact surface. (Ref. 2: Rabota i moshchnost' prokatki. Teoriya obrabotki metallov davleniyem (sb. statey)

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23175

S/148/60/000/007/022/023/XX
A161/A033

Theory of continuous rolling

(The Working and Rolling Power. Assembled Articles on the Theory of Pressure Working and Metals), Mashgiz, 1958; Ref. 3: O rabote treniya pri prokatke. Teoriya obrabotki metallov davleniyem (sb. statey) (On the Working Friction at Rolling. Assembled Articles on the Theory of Pressure Working and Metals), Mashgiz, 1958). The basic kinematic equation in the calculation is

$$v\omega_\gamma \cos\gamma = v\omega_1 (1 + i) = c \qquad (9)$$

where v is the peripheral velocity of rolls, ω_γ - the cross section area of the strip in the critical deformation spot; γ - the critical angle. Value "c" is a constant which must be known to determine the load and lead in all mill stands, and the strip tension in separate sections. The tension formula is evolved

$$\sigma_1 - \sigma_0 = \sigma_s \ln \frac{h_0}{h_1} - 1\tau_c \sqrt{\frac{R}{h_1}} \left(\text{arctg} \sqrt{\frac{\Delta h}{h_1}} - \frac{\tau_{c2}}{\tau_c} \text{arctg} \sqrt{\frac{R}{h_1}}\ \gamma \right) \qquad (25)$$

and differentiated for each stand. (σ_0 and σ_1 - specific tension in the rear

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and front strip end; σ_s - the mean yield limit of strip in the deformation spot; ln - a value from (Ref. 2) (3); h_0, h_1 - the start and end strip thickness; τ_0 - a certain intermediate value of the specific friction forces in the seat deformatiion; R - roller radius). The rolling power equation (29) is differentiated and reduced to the brief form

$$\frac{dN}{N} = \frac{dM}{M} + \frac{dv}{v} - \frac{dR}{R}$$

where N is power, M - the torque on the motor shaft; $\frac{dM}{M}$ is to be determined by the equation (29), and $\frac{dv}{v}$ by the equation (14). The lead is found by differentiating the equation

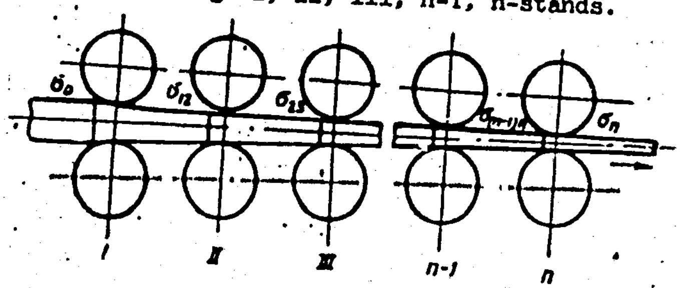
$$i = \frac{R}{h_1} \gamma^2$$

It is suggested to replace the differentials by their gains and use initial values instead of the variable parameters in practical calculations. Accurate calculations are possible by methods known in mathematics, or with the use of electronic computers. There is 1 figure and 3 Soviet-bloc references.

ASSOCIATION: Chelyabinskiy politekhnicheskiy institut (Chelyabinsk Polytechnical Institute)

SUBMITTED: June 15, 1959

Figure 1: Layout of continuous rolling. I, II, III, n-1, n-stands.



VYDRIN, V.N.; VOLOSHNIKOV, V.P.; SARDINSKIY, N.P.; AMOSOV, P.N.

Studying the leading on continuous small-shape mills. Izv. vys. ucheb. zav.; chern. met. no.9:110-115 '60. (MIRA 13:11)

1. Chelyabinskiy politekhnicheskiy institut i Chelyabinskoye otdeleniye Gosudarstvennogo proyektnogo instituta "Tyazhpromelektroproyekt."

(Rolling (Metalwork))

S/148/60/000/011/008/015
A161/A030

AUTHORS: Vydrin, V. N.; Amosov, P. N.; Boyko, M. Ye.; Moshkin, S. I.

TITLE: Investigation of pressure and tension in a continuous small--gage merchant rolling mill

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 11, 1960, 81 - 87

TEXT: Data on the rolling pressure and its dependence on tension in continuous merchant mills are of practical and theoretical interest, but little study had been devoted to the problem up to now. The subject investigation has been carried out on a 300 mm mill by the use of a membrane type dynamometer (Figure 2) for pressure and a different dynamometer for tension (the latter described in Ref. 2, same four authors, in this periodical No. 6, 1959). The tension dynamometer had been improved, the new design is shown (Figure 2); it was calibrated directly in the mill stand. Measurements data were recorded by a MPO-2 (MPO-2) oscillograph, under normal operation, and with artificially produced tension at the rear or at the front. Tension dynamometers were installed from both sides of stand

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No. 3 in the rough mill group, and pressure dynamometers were placed under one ore beneath both the down screws. Operation in the finish stand was also studied, with one rear tension dynamometer placed from the front side, and one pressure dynamometer. The observed amplitude of pressure and tension varied regularly in periods corresponding to one roll revolution. The conclusion was made that the cause of alternating dynamic loads are the spindles and the Hook joints. As is known, the circumference velocity of the driven shaft at a Hook joint varies during one revolution in a definite range depending on the angle of obliqueness of the shafts, e.g., the velocity variation is 5 % at an oblique angle of 10 %. When two Hook joints are used and placed with the same orientation in the space (as was the case in experiments), the unevenness of the driven shaft is reduced, but it is obvious that it is not fully eliminated. A spindle has a considerable mass, and it works like a flywheel rotating unevenly at every revolution. The slight jerking of strip observed between the stands without the presence of a loop or considerable tension demonstrates this. It is evident that the velocity of the rolls varies during a revolution, and the tension varies with it in regular periods. This is not observed in linear or single-

S/148/60/000/011/008/015
A161/A030

Investigation of pressure and ....

-stand mills, but in continuous mills working at tension (even if very slight) it results in regular variations of pressure and tension, and the thickness of the rolled metal varying periodically. Eccentricity of the roll trunnion bores might have a similar effect, but not in these experiments for the shape of the harmonics would then be smoothly sinusoidal, and this is not the case. The oscillograms regularly show four peaks in every period, corresponding to the four positions of the Hook joint in the space. Eccentricity of the rolls could not have this effect, for it did not exceed hundredths of one millimeter. There are 9 figures and 2 Soviet references.

ASSOCIATION: Chelyabinskiy politekhnicheskiy institut i Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk metallurgical institute and Chelyabinsk metallurgical plant)

SUBMITTED: February 17, 1960

Investigation of pressure and ...

Figure 2: Membrane dynamometer for pressure. (1) lid; (2) fastening screws; (3) gasket; (4) wire strain gages; (5) housing.

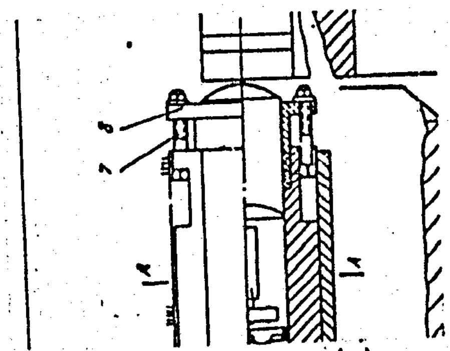

Figure 3: New tension dynamometer. (1) abutment screw; (2) bracket; (3) housing; (4) bushing; (5) core; (6) stop screw; (7) tie bolt; (8) stuffing box lid; (9) transition block; (10) wire strain gages; (11) stop; (12) attachment bolts.

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A161/A030

Investigation of pressure and ....

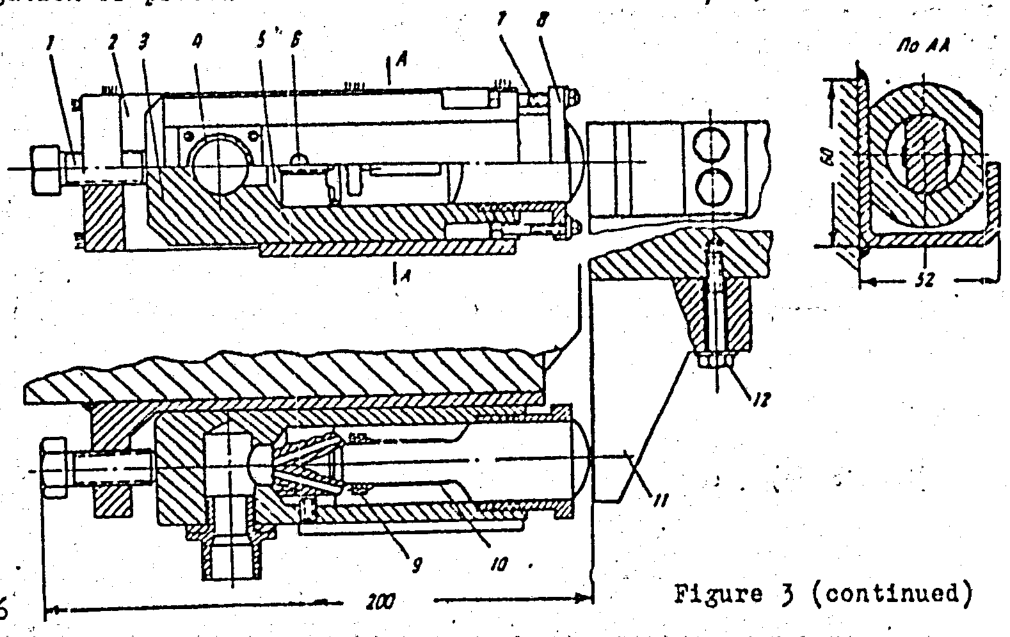

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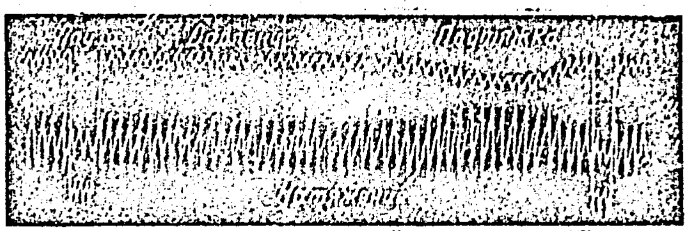
Figure 3 (continued)

Figure 8: The effect of rear tension on the pressure in finish stand (simplified).



S/148/60/000/009/015/025
A161/A030

AUTHORS: Vydrin, V.N., Volosnikov, V.P., Sardinskiy, N.P., and Amosov, P.N.

TITLE: Investigation of lead in a continuous merchant mill

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 9, 1960, 110-115

TEXT: Theoretical lead calculation methods exist for rolling strip on smooth rollers only. The new method described permits measurements of lead on any rolling mill. It is based on measurement and comparison of distances passed by a point on the surface of the roller and a point on the surface of metal being rolled. Two electromechanical pickups (interrupters) watch the velocity of the rollers and of the strip. The pickups (Fig.1) have a collector (1) at the same axle (2) with a disc (3) with file-cut on the edge to prevent slip. The axle runs on two ball bearings in casing (5) and is fixed by the bushing (6) and cover (7), and sealed with gaskets (8 - and 9) and packing (10). The collector plates are connected to the pickup mass through the contact (11) so that the brush slides alternately over the conducting and over the idle plate when the disc rotates, and the circuit

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961410001-8"

interrupts. The brush holder (12) is attached by means of the bracket (13). The circuit closes as many times during one revolution of the disc, as many collector plates are connected with the pickup body. Two like pickups rotating at the same velocity give the same number of pulses in a time unit, and the velocity of the two discs in contact with the roller and with the strip will differ by the value of lead. A photo shows the pickups in operation (Fig.2). Pulses from the pickups can be recorded on film with a МПО-2 (MPO-2) oscillograph, or they can be counted directly with the use of a special system. The oscillographing is simple. An oscillogram is shown (Fig.3). But the processing of measurement results is not convenient. The special counting system is an electric computer, illustrated in a block diagram (Fig.4). Voltage pulses from the two pickups ИД-1 and ИД-2 go into a limiting circuit ОВИ-1 or ОВИ-2 ("ogranichitel' vkhodnykh impul'sov" = input pulse limiter), for even a slight beat of the collector changes the transition resistance between it and the brush, and the pulse amplitude changes. Pulses limited in amplitude go on to amplifiers У-1 and У-2, and on to the shaping circuit ФИС consisting of a half-cycle multivibrator with cathode and anode-grid connection. Sharp output pulses from the ФИС with

50-60 microsecond duration are the count pulses. A special control system has been built for a precise simultaneous start and end of the count from both pickups, with start push button ПК earthing the anode voltage circuit through a high-resistance resistor. The voltage difference formed at the moment is differentiated and fed into the pulse-forming circuit ФИ, and the voltage front rises abruptly. The pulse from the ФИ is differentiated, amplified in the amplifier У-3 and fed to start the control trigger УТ. The excitation time of the trigger is the metering time. The trigger УТ controls through the cathode follower КП, the coincidence circuits И receiving also the pulses from the ФИС units. The counting storage units СНР-1 and СНР-2 count pulses during the excitation time of the trigger УТ. The УТ is returned into the start position by again pressing the starting push button ПК. The counting storage units are binary counters, but the counters used in experiments were decade counters (with ten series-connected triggers) permitting count $2^9 + 2^8 + 2^7 + 2^6 + 2^5 + 2^4 + 2^3 + 2^2 + 2^1 + 2^0 = 1023$ pulses. This was sufficient at a rolling speed of up to 10 m/sec and 2 sec metering time. Neon lamps are connected into the anode circuits of the triggers for fixing the excitation. The system is returned into a start position after metering by the synchronization push-button КС through the pulse shaper ФИ, differentiating circuit ДЦ, detector Д for producing unipolar positive pulses, and the amplifier У-4. This return system works like the counting control system. The portion of Fig.4 separated out by a dashed line shows the portion of the system that was absent in the described operating model, but which can easily be built. It is a system for automatic comparison of data that can produce digital readings, or readings in the form of voltage or current on a dial indicator graduated in lead units, or on an oscillograph. This automatic comparator may be in the form of a usual parallel adder working as subtracter. In this case it would be controlled from a shock oscillator excited by synchronization pulse with subsequent formation of the produced pulse series into a series of sharp pulses for controlling the operation of the adder. This effect can be obtained also with the use of any type of delay line. This comparing unit can solve the equation

$$i = \frac{100}{n_B} \Delta n \%$$

where i is the lead value in per cent; Δn - the difference of the counted pulse values; n_{β} - the number of pulses counted from the pickup on the roll. The metering error is 0.098% at maximum pulse number 1023. Experiments were carried out on the planishing stand No.9 of the mill, in rolling spring steel strip 76 x 9.5 mm. The results of pulse count are given in a table. The mean lead in normal rolling was 4.9%, the maximum 7.6%, and the minimum 2.7%. The effect of tension on the lead is shown in curves (Fig.5). At a certain degree of velocity mismatch, when the lead curve crosses the X axis, the strip slips in the rollers. The front tension increases lead, but it was produced by the No.10 stand alone in this case, and the rear tension from the stands No.1 to 8 was stronger. Conclusion: The suggested metering method permits: a) measuring and recording on oscillograph film the value and the variations of lead or lag in any rolling mill; b) to reveal slip of rolls; c) to determine the rolling diameter in rolling in grooves from the relation

$$\frac{n_{\Pi}}{n_{\beta}} = \frac{D_{K}}{D_{\delta}}$$

where n_{Π} - the number of pulses of the pickup on the strip; n_{β} - the pulses number from the pickup on the roll; $D_Г$ - the roll barrel diameter; D_K - the rolling diameter. There are 5 figures and 1 table.

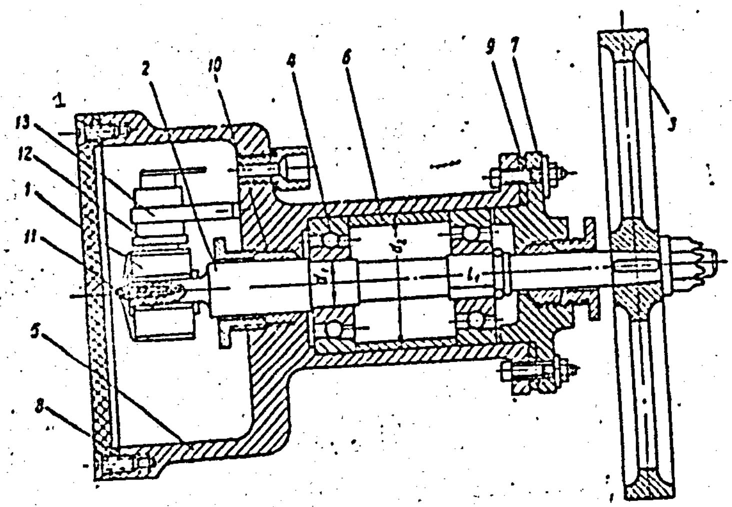
ASSOCIATION: Chelyabinskiy politekhnicheskiy institut (Chelyabinsk Polytechnical Institute) and Chelyabinskoye otdeleniye GPI "Tyazhpromelektroproyekt" (The Chelyabinsk Branch of the GPI "Tyazhpromelektroproyekt")

SUBMITTED: 7 December 1959

S/148/60/000/009/015/025
A161/A030

Investigation of lead ...

Fig. 1



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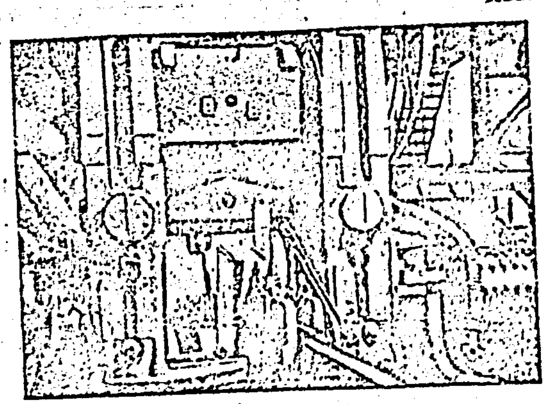
A161/A030

Investigation of lead ...

Fig. 2

2



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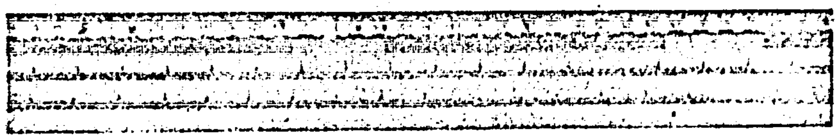
Investigation of lead ...

S/148/60/000/009/015/025
A161/A030

Fig. 3

3



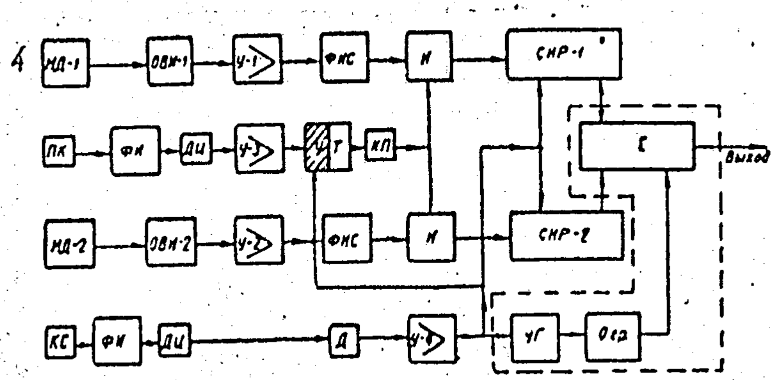
Card 9/10

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961410001-8"

S/148/60/000/009/015/025
A161/A030

Investigation of lead ...

Fig. 4



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VYDRIN, V.N.; AMOSOV, P.N.

Device for measuring the tension of a strip on continuous section mills. Izm.tekh. no.7:9 Jl '61. (MIRA 14:6)
(Rolling mills)
(Strain gauges)

VYDRIN, V.N.

Design equations for the continuous rolling porcess. Izv. vys. ucheb. zav.; chern. met. no.3:61-66 '61. (MIRA 14:3)

1. Chelyabinskiy politekhnicheskiy institut.
(Rolling(Metalwork))

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001961410001-8"

VYDRIN, V.N.

Parameters characterizing the shape of the deformation center in rolling. Izv. vys. ucheb. zav.; chern. met. 4 no.11:94-96 '61. (MIRA 14:12)

1. Chelyabinskiy politekhnicheskiy institut.
(Rolling (Metalwork))
(Deformations (Mechanics))

S/115/61/000/007/002/004
E194/E435

AUTHORS: Vydrin, V.N. and Amosov, P.N.

TITLE: An instrument for measuring strip tension on continuous section rolling mills

PERIODICAL: Izmeritel'naya tekhnika, 1961, No.7, p.9

TEXT: In 1956 the Chelyabinsk Polytechnical Institute suggested a method for direct measurement of tension on continuous section rolling mills; it is described in previous articles (Ref.1: Vydrin V.N., Boyko M.Ye., Amosov P.N. and Moshkin S.I. Izvestiya vysshikh uchebnykh zavedeniy MVO SSSR, Chernaya metallurgiya, 1959, No.6; Ref.2: Vydrin V.N. Metallurgizdat, M., 1960). It is now proposed to introduce this device into production to control the speed of the roughing group of stands of the mill. The strip in a continuous mill may be subject to either tension or compression and the same pick-up should be suitable for operating with either. Accordingly, a new type of pick-up was developed and its construction is described here. Referring to the illustration, the frame of the pick-up 5 contains a core 9 carrying a strain gauge bridge. The core is fixed into the body of the frame without backlash by means of the

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S/115/61/000/007/002/004
An instrument for measuring strip ...E194/E435

ring 4 and the threaded rod 7. A cover is provided to prevent ingress of water and dust. The two bearing houses 2 contain double row ball bearings type No.1002, being held down by the bolts 8. The bearings are also protected against dirt and moisture. One of the bearing housings is fixed to clamps 1 which are welded to the frame and the other to lugs which are welded to the roll support pads. The adjusting nut 3, with right and left hand thread, is used to adjust the gap between the frame and the pad. By means of this device, the pad which rests on the cylindrical support is adjusted within the frame until there is the same clearance on both sides of it and then the adjusting nut 3 is fixed by lock nuts. With this pick-up it is possible: to measure tension and thrust fore and aft of the stand; to determine the influence of tension and thrust on the rolling pressure and other rolling conditions; to determine the additional horizontal loads on the roll neck bearings, which is particularly important in high speed mills; to provide automatic control of mill operation with control of tension by applying the pick-up signal to the mill motor control circuit. There are 1 figure and 2 Soviet references.

Card 2/3

VYDRIN, V.N.; BOYKO, M.Ye.; MOSHKIN, S.I.; AMOSOV, P.N.

Investigating the process of strip rupture in continuous rolling mill stands. Izv. vys. ucheb. zav.; chern. met. 4 no.7:97-100 '61. (MIRA 14:8)

1. Chelyabinskiy politekhnicheskiy institut i Chelyabinskiy metallurgicheskiy zavod.
(Rolling (Metalwork))

VYDRIN, V.N., kand.tekhn.nauk; BEREZIN, Ye.N., inzh.; KHIMICH, G.L.; TRET'YAKOV, A.V.; FEDOROV, M.I.; VASHCHENKO, Yu.I.

"Mechanical equipment of rolling mills" by A.A. Koroleva. Reviewed by V.N. Vydrin and others. Stal' 22 no.1:61-63 Ja '62. (MIRA 14:12)

1. Chelyabinskiy politekhnicheskiy institut (for Vydrin, Berezin).
2. Nauchno-issledovatel'skiy konstruktorsko-tekhnologicheskiy institut tyazhelogo mashinostroyeniya Uralmashzavoda i Ural'skiy politekhnicheskiy institut (for Khimich, Tret'yakov, Fedorov).
(Rolling mills—Equipment and supplies)
(Koroleva, A.A.)

VYDRIN, V.N.; BROVMAN, M.Ya.; SKORKIN, N.V.

Measuring tension in continuous rolling mills. Izv. vys. ucheb. zav.; chern. met. 6 no.6:100-105 '63. (MIRA 16:8)

1. Chelyabinskiy politekhnicheskiy institut.
(Rolling mills)

VYDRIN, V.N.; AMOSOV, P.N.; AGEYEV, L.M.

Dynamometer with a nonamplifying circuit and resistance strain gauges. Izm. tekh. no.8:24-25 Ag '63. (MIRA 16:10)

VYDRIN, V.N.; BARKOV, L.A.; BLINOV, Yu.I.

Determining contact areas in rhomb - square grooves. Izv. vys. ucheb. zav.; chern. met. 6 no.12:109-111 '63. (MIRA 17:1)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, V.N.; KRAYNOV, V.I.

Investigating operating conditions of continuous cold rolling sheet mills in connection with automatic control problems. Izv. vys. ucheb. zav.; chern. met. 6 no.12:112-117 '63. (MIRA 17:1)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, Vladimir Nikolayevich, doktor tekhn. nauk; SITNIKOV, Leonid Leonidovich, inzh.; KORNILOV, Petr Vasil'yevich, inzh., SVET, Ye.B., red.

[Strength of rolling-mill rolls] Stoikost' prokatnykh valkov. Cheliabinsk, Cheliabinskoe knizhnoe izd-vo, 1964. 70 p. (MIRA 17:8)

VYDRIN, V.N.; BARKOV, L.A.

Determining the rolling diameter in rhomb - square grooves.
Izv. vys. ucheb. zav.; chern. met. 7 no.1:89-94 '64.
(MIRA 17:2)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, V. N.; BARKOV, L. A.

Capacity during rolling in square and diamond-shaped grooves.
Izv. vys.ucheb.zav.; chern.met.7 no. 5:94-96 '64. (MIRA 17:5)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, V.N.; BA?KOV, L.A.

Energy for rolling in square and diamond-shaped grooves with tension or backing of the strip. Izv. vys. ucheb. zav.; chern. met. 7 no.2:94-99 '64. (MIRA 17:3)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, V. N.; BROVMAN, M. Ya.; RIMEN, V. Kh.

Elastic longitudinal vibrations of strips being rolled on continuous mills. Izv. vys. ucheb. zav.; chern. met. 7 no. 4:83-77 '64. (MIRA 17:5)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, V.N.; BARKOV, L.A.

Characterof the critical line in the diamond - square groove system. Izv. vys. ucheb. zav.; chern. met. 7 no.3:113-117 '64. (MIRA 17:4)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, V.N., doktor tekhn. nauk, prof.; BROVMAN, M.Ya., kand.tekhn.nauk; RIMEN, V.Kh., inzh.

Dynamometers for measuring stresses in continuous rolling mills. Izv.vys.ucheb.zav.;mashinostr. no.5:162-167 '64. (MIRA 18:1)

1. Chel'yabinskiy politekhnicheskiy institut (for Vydrin). 2. Yuzhno-Yral'skiy mashinostroitel'nyy zavod (for Brovman, Rimen).

VYDRIN, V.N.; BATIN, Yu.T.

Investigating rolling with equal specific and absolute tensions. Izv. vys. ucheb. zav.; chern. met. 7 no.9:102-105 '64. (MIRA 17:6)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, V.N.; AMOSOV, P.N.; FEDOSIYENKO, A.S.; KRAYNOV, V.I.

Measuring irregularities of angular velocity in rolls. Izm. tekh. no.11:31-34 N '64. (MIRA 18:3)

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VYDRIN, V.N.; ROZNIKOVA, A.P.; STEBLEVA, A.T.

Relationship between sphalerite-galenite mineralization and dolerite dikes (Yenisey Range). Dokl. AN SSSR 159 no.6:1309-1312 D '64. (MIRA 18:1)

1. Moskovskiy gosudarstvennyy universitet i Krasnoyarskoye geologicheskoye upravleniye. Predstavleno akademikom V.I.Smirnovym.

ACC NR: AR6014378 (A,N) SOURCE CODE: UR/0137/65/000/011/D035/D035

AUTHORS: Vydrin, V. N.; Novikov, A. G.

TITLE: Velocity and length of a floating mandrel during continuous rolling of pipes

SOURCE: Ref. zh. Metallurgiya, Abs. 11D240

REF SOURCE: Sb. Proiz. svarn. i besshovn. trub. Vyp. 3. M., Metallurgiya, 1965, 70-78

TOPIC TAGS: pipe, metallurgic process, metal working machine, metal tube, metal rolling

ABSTRACT: The fundamental equation of motion of a floating mandrel during a continuous pipe rolling process was derived. The methodology of calculating the velocity and optimum length of a free floating mandrel was improved. Formulas for determining the advance of the mandrel from the pipe and velocity of the free floating mandrel were derived. The calculated results were compared with experimental data. 2 illustrations, 2 tables. Bibliography of 6 citations. L. Kochenova [Translation of abstract]

SUB CODE: 13

Card 1/1 UDC: 621.774.001

VYDRIN, V.N.; GRUZDEV, V.S.

Endogenetic dispersion halos of zinc-lead deposits in the Yenisey Range. (MIRA 18:4)
Geol. rud. mestorozh. 7 no.1:45-57 Ja-F '65.

1. Moskovskiy gosudarstvennyy universitet, kafedra poleznykh iskopayemykh, i Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya, Moskva.

BROVMAN, M.Ya.; VYDRIN, V.N.; YERMOKHIN, F.K.; KISLYUK, V.A.; KRAYNOV, V.I.; LEVINTOV, S.D.; RIMEN, V.Kh.; SEREBRYAKOV, A.N.; SHEYDER, B.E.

Method of controlling the tension in continuous rilling mills. Stal' 25 no.7:629-631 Jl '65. (MIRA 18:7)

VYDRIN, V.N.; FEDOSIYENKO, A.S.

Kinematic conditions in the continuous rolling process. Izv. vys. ucheb. zav.; chern. met. 8 no.2:93-98 '65. (MIRA 18:2)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, V.N.; KRAYNOV, V.I.

Investigating the process of continuous rolling of large sections. Izv. vys. ucheb. zav.; chern. met. 8 no.5:90-97 '65.

(MIRA 18:5)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, V.N.; BATIN, Yu.T.

Capacity and leading during the rolling in box passes with tension and back tension of the strip. Izv. vys. ucheb. zav.; chern. met 8 no.7: 88-94 '65. (MIRA 18:7)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, V.N.; FEDOSIYENKO, A.S.

Theory of the dynamic operating conditions of continuous cold rolling mills. Izv.vys.ucheb.zav.; chern.met. 8 no.8:65-68 '65. (MIRA 18:8)

1. Chelyabinskiy politekhnicheskiy institut.

VYDRIN, V.N.; AGEYEV, L.M.

Effect of expansion in width on the form of the epure of contact stresses. Izv. vys. ucheb. zav.; chern. met. 8 no.11:69-73 '65. (MIRA 18:11)

1. Chelyabinskiy politekhnicheskiy institut.

MATVEYEV, Yu.M., doktor tekhn. nauk; VYDRIN, V.N., doktor tekhn. nauk; FINKEL'SHTEYN, Ya.S., kand. tekhn. nauk; KAUFMAN, M.M., kand. tekhn. nauk; GLEYBERG, A.Z., kand. tekhn. nauk; NOVIKOV, A.G., inzh.; SITNIKOV, L.L., inzh.; NODEV, E.O., inzh.; STOLETNIY, M.F., inzh.; STERN, V.A., inzh.; FRIDMAN, D.S., inzh.

Operating conditions and wear of mandrels on the continuous billet mill of a 30-102 pipe rolling unit. Stal' 25 no.10: 930-934 O '65. (MIRA 18:11)

ACC NR: AP70031 (A) SOURCE CODE: UR/0133/67/000/001/0053/0057

AUTHOR: Brovman, M.Ya.; Skorkin, N.V.; Shumkov, V.D.; Vydrin, V.N.; Dodin, Yu.S.; Makarov, V.G.; Rimen, V.Kh.; Lind, I.K.

ORG: Yuzhuralmashzavod; Chelyabinsk Polytechnic Institute (Chelyabinskiy politekhnicheskiy Institut); Chelyabinsk Metallurgical Plant (Chelyabinskiy metallurgicheskiy zavod)

TITLE: Investigation of a new 900/700/500 continuous blooming mill

SOURCE: Stal', no. 1, 1967, 53-57

TOPIC TAGS: metal rolling, hot rolling, rolling mill, continuous rolling mill/900-700-500 rolling mill

ABSTRACT:
The new 900/700/500 continuous blooming mill, designed and built at the Yuzhno-Ural'skiy Machine Building Plant, is in operation at the Chelyabinsk and Krivorozhskiy Metallurgical Plants. The new mill is designed for rolling square blooms with a cross section of 80 x 80—170 x 170 mm and flat slabs from 370 x 370 mm carbon and alloy steel blooms weighing up to 9 tons. Provision is also made for rolling round bars 105, 120, 140, 150, 170 and 220 mm in diameter. The mill is designed to produce 5.5 million tons of rolled stock per year; the metal delivery rate at the last stand

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ACC NR: AP7003872

is 7 m/sec and the specific efficiency per ton of the equipment is said to be 25% higher than that of the most efficient existing blooming mills. The new mill consists of 14 stands. The first group consists of two separate 900 horizontal stands and a continuous set of six stands (two of them with vertical rolls). The second group of stands consists of three vertical and three horizontal stands. A planetary flying shears, made at the Staro-Kramatorskiy Plant, is used for cutting billets to size. Rolling large billets, 150 x 150 mm and up, is done in the first group of stands; the billets are shifted to a side roll gang and cut to length with 1000-ton shears. The stands have an individual electric d-c motor drive with continuous automatic power regulation. For further automation and higher precision of the rolling process, provision is made for installing magneto-elastic sensors of the metal pressure on the rolls. Experience showed that for continuous safe operation the billet surface temperature should not be lower than 1000C. The design of the stands and the technology used ensure the necessary accuracy for rolling commerical stock. Orig. art. has: 6 figures and 3 tables. [MS]

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 006/ ATD PRESS: 5115

Card 2/2

VYDRIN, Yu. V.; TRUSOVA, F.V.

Controlling the Acroptilon picris. Zemledelie 26 no. 4:34-40 Ap '64. (MIRA 17:5)

1. Krymskaya oblastnaya gosudarstvennaya sel'skokhozyaystvennaya opytnaya stantsiya.