LEYKHTLING, K.A.; SMORGON, L.S., nauchnyy sotrudnik

Wear resistance of saws with bits. Trudy VSNIPILesdrev no.10:27-32 '64. (MIRA 18:10)

1. Nachal'nik laboratorii stankov i instrumentov Vostochno-Sibirskogo nauchno-issledovatel'skogo i proyektnogo instituta lesnoy i derevoobrabatyvayushchey promyshlennosti (for Leykhtling).

LEYKHTMAN, D.L., KLYUCHNIKOVA, L.A.

Effect of advection on the intensity of snow thawing. Trudy GGO no.60:32-39 '56. (MLRA 10:7)

(Snow) (Thawing)

LEYKIN, A., inzh.

Expenditure of power in moving grain by chain conveyors with sunk scrapers. Muk.-elev. prom. 28 no.1:14-15 Ja '62. (MIRA 16:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy i eksperimental'no-konstruktorskiy institut prodovol'stvennogo mashinostroyeniya.
(Grain--Handling machinery)

DEMSKIY, A., inzh.; TAMAROV, Ye., inzh.; KALASHNIKOV, N., inzh.; SHISKIN, N., inzh.; LEYKIN, A., inzh.; IL'UEMINI, I., inzh.

New machines for mills and elevators. Muk.-elev. prom. 28 no.9: 22-26 S '62. (MIRA 15:10)

1. Gor'kovskiy mashinostroitel'nyy zavod im. Vorob'yeva (for Demskiy, Tamarov, Kalashnikov, Shishkin). 2. Vsesoyuznyy, nauchno-issledovatel'skiy i eksperimental'no- konstruktorskiy institut prodovol'stvennogo mashinostroyeniya (for Leykin). 3. Khar'kovskaya mashinoispytatel'naya stantsiya.

(Grain-handling machine)

LEYKIN, A.; IL'YEMINI, I.

Screw conveyor-loader for grain. Muk.-elev. prom. 29 no.3:24-25 Mr '63. (mira 16:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy i eksperimental'no-konstruktorskiy institut prodovol'stvennogo mashinostroyeniya (for Leykin). 2. Khar'kovskaya mashinoispytatel'naya stantsiya (for Is'yemini).

CHARNYY, M.; LEYKIN, A.

The new All-Union State Standard for belt bucket conveyors for grain and flour. Muk.-elev. prom. 29 no.9:26-27 S '63. (MIRA 17:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy i eksperimental'no-konstruktorskiy institut prodovol'stvennogo mashinostroyeniya.

TARASEVICH, Yuriy Sergeyevich; FUKS, I.I., inzh., retsenzent; LEYKIN, A.M., inzh., red.; SOROKA, M.S., red.izd-va; RUDENSKIY, Ya.V., tekhn.red.

[Designing dies for cold pressing] Konstruirovanie shtampov dlia kholodnoi shtampovki. Kiev, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 187 p. (MIRA 12:2)
(Dies (Metalworking)) (Metals--Cold working)

117-58-5-6/24

AUTHOR: Leykin, A.M., Engineer

TITLE: Dies in Multispindle Automatic Presses (Shtampy k mnogo-shpindel'nym pressam-avtomatam)

PERIODICAL: Mashinostroitel', 1958, Nr 5, pp 17-21 (USSR)

ABSTRACT: Constructional features of dies for multi-spindle presses are different from those of ordinary dies. Figure 1 shows a convenient form of the lower part of die; the length of the die correspondends to the width of the table of the press, while the distance between retaining bolts must correspond with the grooves of the table. To the extent as the dies are installed on one press and function at the same stroke of one slide, they must be strictly of the same height. Blanks are cut out from a strip either on ordinary presses or on automatic presses. A typical shearing die is shown in figure 2 with the corresponding matrix. The first extrusion of a flat blank is done by means of the die shown in figure 3. The matrix consists of a bushing which can be centered in relation to the punch. On lowering the punch the part is extruded to the desired shape. After the first operation the part is picked up by tongues and placed in position for the following operation.

Card 1/2

Dies in Multispindle .utomatic Presses 117-58-5-6/24

Figure 4 shows a typical die for the consecutive extrusion; this die differs from the preceding one only in the construction of the lower part. Figure 5 shows the process of extrusion at the beginning of the operation (a) and at the end (b). Figure 6 shows the position of the extruded part on the next die designed to cut the flanges. Figure 7 shows the die forming the bottom of the part and calibration of the flange, as being the next operation in the cycle. The following bead rolling operation is done by a die as is shown in figure 8. For the punching of holes, two types of dies can be used, the difference of construction depending on whether the waste is evacuated through the upper or the lower part of the die, as is shown in figures 9 and 10. There are 10 figures.

AVAILABLE: Library of Congress

Card 2/2 1. Dies-Construction

LEYKIN, A.M.

Observations of nova Herculis at the Observatory of the Tomsk University. Astron. tsir. no. 214:13 S '60. (MIRA 14:1)

1. Kafedra astronomii Tomskogo universiteta.
(Stars, New)

1964

LEYKIN, A. S.

DECEASED

c.' 63

SPRAY PAINTING

Cand, Tech. Sci.

LEYKIN, A. S.

Dissertation: "Distribution of stresses in the crankpins of aviation engines." 4 Nov 49

Scientific Council of the Central Sci-Res. Inst. of Aircraft Engine Building imeni

P. I. Baranov

SO Vecheryaya Moskva
Sum 71

LEYKIN, A. S., and SERENSEN, S. V.

"Studies of the Distribution of Stresses in Crankshafts of Airplane Engines."

SO: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, No 3, pp 451-476, 1950.

LEYKIN, A-S.

USSR/Miscellaneous---machine construction

Card 1/1

Author : Leikin, A. S., Cand. in Tech. Sciences

Title : Concentration of strains and calculation of the strength of a shaft with a transverse opening

Periodical : Vest. mash. 34/3, 3-14, Mar/1954

Abstract : Transverse openings in shafts, because of the high concentration of strains which they cause, are often a source of breaking. The questions which have to be considered are the relation of the distribution of strains in hollow shafts with transverse openings during bending or twisting, to the effect of the thickness of the walls of the shaft, size of openings and their angle as compared with the shaft and nature of the edges of the openings. Results of experiments are given along with computations of strength and strains. Twelve Russian references, one dated 1952. Tables and graphs.

Institution : .....

Submitted : .....

LeyKiN, A.S.

PHASE I BOOK EXPLOITATION SOV/3472

Akademiya nauk SSSR. Institut mashinovedeniya

Problemy prochnosti v mashinostroyenii, vyp. 4 (Strength Problems in Mechanical Engineering, No. 4) Moscow, Izd-vo AN SSSR, 1959. 122 p. Errata slip inserted. 2,300 copies printed.

Ed.: N.I. Prigorovskiy, Doctor of Technical Sciences, Professor; Ed. of Publishing House: G.B. Gorshkov; Tech. Ed.: Yu.V. Rylina; Editorial Board: S.V. Serensen, Academician, USSR (Chairman), F.M. Dimentberg, Doctor of Technical Sciences, V.O. Kononenko, Doctor of Technical Sciences, S.V. Pinegin, Doctor of Technical Sciences, Professor, D.N. Reshetov, Doctor of Technical Sciences, Professor, G.V. Uzhik, Doctor of Technical Sciences, Professor, and R.M. Shneyderovich, Candidate of Technical Sciences.

PURPOSE: This collection of articles is intended for scientists and engineers concerned with plastic deformation.

COVERAGE: This collection of 6 articles by different authors gives the results of investigations carried out by the Institut mashino-

Card 1/3

vedeniya AN SSSR (Institute of Machine Science, Academy of Sciences, USSR). The foreword was written by N.I. Prigorovskiy, Professor, Doctor of Technical Sciences, editor of the collection. The collection of articles is the second of a series and discusses the problem of tensile and compressive stresses, elasticity, deformations under loading, and the calculation and analysis of stresses. The authors emphasize advanced methods of analysis and report on experimental results. References follow each article.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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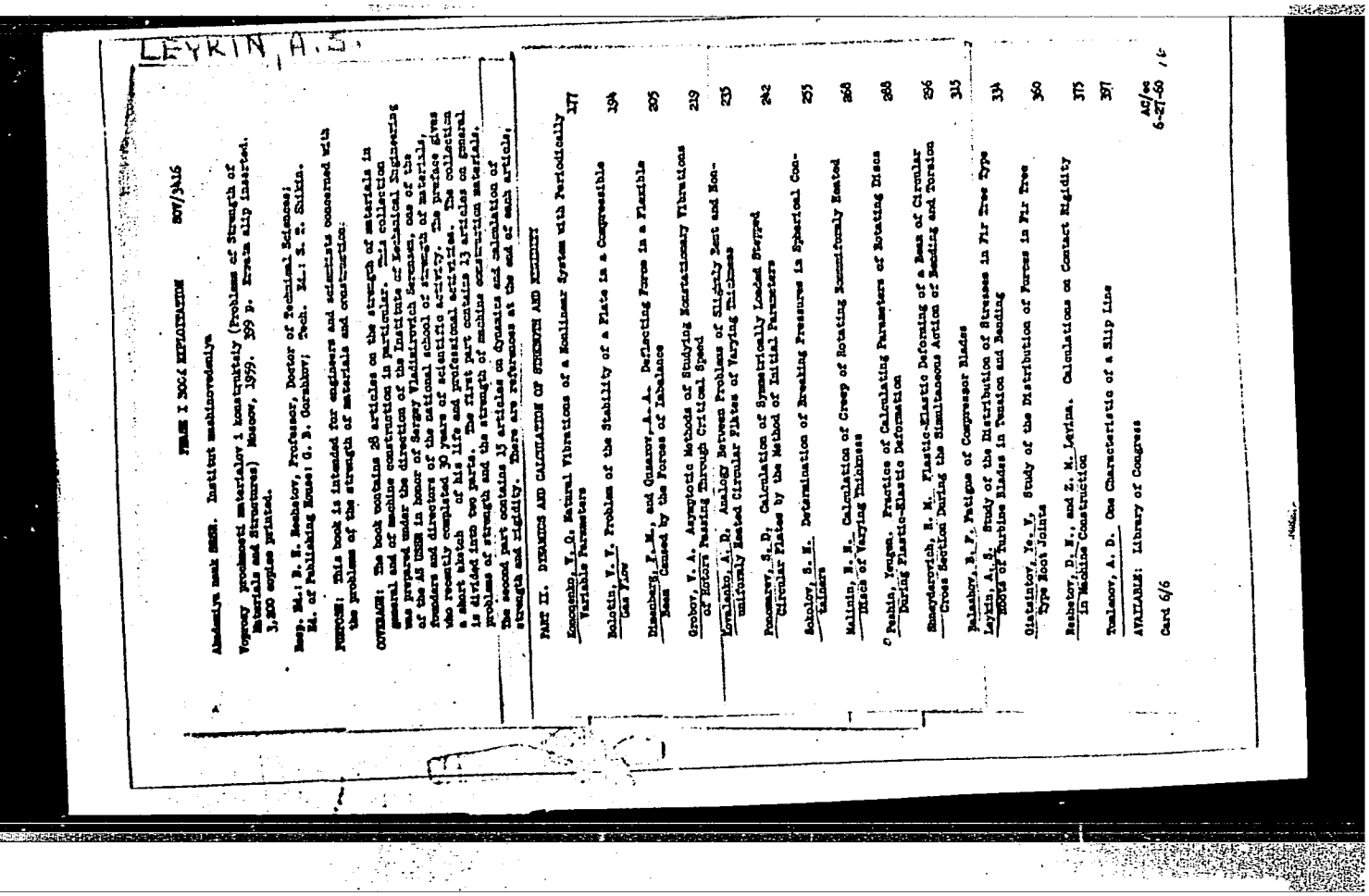
7-27-60



LEYKIN, A.S.

FILE I 3064 EXPLOITATION SOV/3315

Abdunaym nauk SSSR. Institut mashinovedeniya

Voprosy prochnosti materialov i konstruktsiy (Problems of Strength of Materials and Structures) Moscow, 1959. 399 p. Errata slip inserted. 3,500 copies printed.

Resp. Ed.: B. E. Resbetov, Professor, Doctor of Technical Sciences; Ed. of Publishing House: G. B. Gorshkov; Tech. Ed.: S. S. Smirin.

PURPOSE: This book is intended for engineers and scientists concerned with the problems of the strength of materials and construction.

COVERAGE: The book contains 28 articles on the strength of materials in general and of machine construction in particular. This collection was prepared under the direction of the Institute of Mechanical Engineering of the AS USSR in honor of Sergey Vladimirovich Serensen, one of the founders and directors of the national school of strength of materials, who recently completed 30 years of scientific activity. The preface gives a short sketch of his life and professional activities. The collection is divided into two parts. The first part contains 13 articles on general problems of strength and the strength of machine construction materials. The second part contains 15 articles on dynamics and calculation of strength and rigidity. There are references at the end of each article.

TABLE OF CONTENTS AND ABSTRACT

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AC/ec
6-27-60

Card 6/6

AUTHOR: Leykin, A. S. (Moscow) SOV/179-59-3-33/45

TITLE: The Distribution of Stresses in Bending a Multi-tooth Coupling of Equal Hardness (Raspredeleniye usiliy pri izgibe mnogozubykh soyedineniy postoyannoy zhestkosti)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 3, pp 179-183 (USSR)

ABSTRACT: A case is described when a herringbone type lock (Fig 1) serves as a coupling device for joining the vane assembly and disc of a turbine. The diagram showing a distribution of stresses is shown in Fig 2. When the distribution of reactive forces due to stresses are defined as Eq (1.1) (where t - step distance between teeth, b - width of the locking ring), then the bending moment can be expressed as Eqs (1.2) and (1.3) (where x_o - length of the locking coupling, ℓ - bending arm of a tooth). The condition of a joined action is defined by Eqs (1.4) and (1.5), where E - modulus of elasticity, μ - Poisson coefficient, I - axial moment of coupling inertia, ω, $\varkappa$, λ and χ_2 - coefficients of the tooth's pliability ($\varkappa = \chi$), $1-\mu^2$ - multiplier, c_1, c_2 - constants of

Card 1/3

The Distribution of Stresses in Bending a Multi-tooth Coupling of Equal Hardness

integration, $N \leqslant 0.2\ M/x_o$ (Fig 2), the index Л denotes the vane shaft and Д - coupling ring of the disc. The condition of equilibrium of forces is expressed by Eq (1.6). Thus, the expression (1.7) is obtained from Eqs (1.2), (1.3), (1.5) and (1.6). The general solution of the problem can be found from Eq (2.3) which is obtained from Eq (1.5) for the conditions (2.1) and (2.2). The formulae (2.4) define the distribution of forces $p_o(x)$ and $p_n(x)$ when the formula (2.5), found experimentally, can be applied . Then, its solution can be determined as Eqs (2.6), (2.7) and (2.8). The bending moments of both the shaft vane and the coupling ring of the disc can be expressed as Eq (2.9) which, when Eq (2.6) is included, can be written as Eq (2.10) ($+ = M_Л(x)$ and $- = M_Д(x)$). The relations (3.3) to (3.8) can be defined for the conditions (3.1) and (3.2), where x - angle of deflection of the cross-section x = 0 of the coupling ring. The formulae in this work were verified experimentally. Fig 3 illustrates the moment

SOV/179-59-3-33/45

The Distribution of Stresses in Bending a Multi-tooth Coupling of Equal Hardness

of bending $M_{\Pi,\Pi}^{*} = M_{\Pi,\Pi}(x)/M$ related to the coupling ring of the lock $x^{*} = x/x_o$ as obtained for the 5-teeth lock. Good agreement between the experimental results (circles) and the theoretical ones (curves) can be seen from this figure.
There are 3 figures and 3 Soviet references.

SUBMITTED: November 8, 1958

Card 3/3

83320

S/179/60/000/004/019/027
E191/E181

26.2122

AUTHOR: Leykin, A.S. (Moscow)

TITLE: On the Overall Non-Uniformity in the Distribution of Stresses in the Roots of Blades in Turbo-Machinery Associated with the Effect of the Blade Profile

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1960, No 4, pp 149-153

TEXT: The strength of turbine blade roots is substantially reduced not only by the presence of local stress concentration sources but also by the curved profiled part of the blade. The connection between the root and the profiled part causes a substantial overall non-uniformity of stress distribution. Failures in blade roots are usually fatigue failures and start at the point of the root where this non-uniformity is greatest. It was found in previous investigations that the effect of the change of section is independent of the effect of stresses due to the forces at the contact points between the blade root and the disc.

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S/179/60/000/004/019/027
E191/E181

On the Overall Non-Uniformity in the Distribution of Stresses in the Roots of Blades in Turbo-Machinery Associated with the Effect of the Blade Profile

For this reason, strain gauge tests were carried out with enlarged metal models of blade profiles integral with rectangular blocks simulating the roots. The models were loaded in tension and bending. The blade portion was of uniform cross-section. In most of the models, an intermediate flange was formed between the blade and the root portions. The different models were distinguished by different relative stiffnesses of the blade and root portions. The ratio of the profile chord to the width of the root was maintained in the narrow interval between 0.85 and 0.96, characteristic of actual designs. The profile shape of the blade was described by the angles of the tangents to the profile contour near the leading and trailing edges and the angles of the tangent to the mean profile line. The position of the blade in relation to the root was characterised by the angle between the blade chord and the plane of symmetry of the root. The section of the blade root in which the stress distribution is sought lies at a variable

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S/179/60/000/04/019/027
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On the Overall Non-Uniformity in the Distribution of Stresses in the Roots of Blades in Turbo-Machinery Associated with the Effect of the Blade Profile

distance from the beginning of the blade section. The ratios of the cross-sectional areas and section moduli of the blade and the root were further parameters. The stresses were measured with strain gauges of 3 mm base. The results of the measurements show that peak stress factors just exceeding 2.0 exist in the root. Very near the top face of the root portion in the middle of the blade profile, the stress nearly vanishes. Two stress peaks exist between the middle and each side face of the root portion. The effects of tension and bending on the stress distribution are very similar. The experiments have yielded families of curves relating the maximum peak stress factor to each of the main parameters characterising the blade and root combination. A set of formulae empirically summarizes the tests. The peak stress factors are related to each of the geometric parameters of the blade profile and the root section.

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83320
S/179/60/000/004/019/027
E191/E181

On the Overall Non-Uniformity in the Distribution of Stresses in the Roots of Blades in Turbo-Machinery Associated with the Effect of the Blade Profile

There are 5 figures and 2 Soviet references.

SUBMITTED: July 11, 1959

Card 4/4

LEYKIN, A.S.

New apparatus and methods of applying uniform paint coatings. Lakokras. mat. i ikh prim. no.4:65-69 '60. (MIRA 13:10)
(Protective coatings)

S/122/60/000/005/004/017
A161/A130

AUTHOR: Leykin, A. S., Candidate of Technical Sciences

TITLE: Stress concentration in crankshaft fillets

PERIODICAL: Vestnik mashinostroyeniya, no. 5, 1960, 20-25

TEXT: Data existing in literature are too limited for accurate evaluation of stresses and strength of crankshafts. Stress concentration at bending and torsion has been studied in experiments with large single-crank metal models (neck diameter 200 mm), and a calculation method is suggested. Strain on the fillet was measured with wire tensiometers and an induction tensiometer, and the main strain sense preliminarily determined by brittle varnish method. A crank specimen and shafts with barrel-shaped bores were examined. The article includes a part of experimental data. The suggested method for calculating the stress concentration in fillets consists in the following procedure. The stress concentration factors are first determined for initial shaft, and then corrected for the given parameters of a real shaft. For the case of bending in the crank plane, the concentration factor $(\alpha_\sigma)_{\Delta=0}$ is first calculated for the fillet of analogous crankshaft but with zero overlapping of necks and an optimum distance to the weight-reducing bore

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Stress concentration in crankshaft fillets

in the adjacent web ($L = L^*$):

$$(\alpha^*_\sigma)_\Delta = 0 = (\alpha'_\sigma)_{\Delta = 0} (\beta_\sigma)_b (\beta_\sigma)_{d_1} \quad (4)$$

where $(\alpha'_\sigma)_{\Delta = 0}$ is the concentration factor $(\alpha_\sigma)_\Delta = 0$ for a shaft with $\frac{b}{d} = 1.6$ and $\frac{d_1}{d} = 0$, determined depending on $\frac{r}{h}$ by Fig. 3 a; $(\beta_\sigma)_b$ and $(\beta_\sigma)_{d_1}$ - factors reflecting the effect of the web width and bore diameter in the neck on stress concentration in the shaft fillet, taken from Fig. 3 b and c. If the weight-reducing bore is eccentrical, a factor must be introduced into the right part of the equation (4), (α_e) depending on the relations $\frac{d_1}{d}$ and $\frac{e}{d}$. Next, the $(\beta_\sigma)_\Delta$ and $(\beta_\sigma)_L$ correction factors characterizing the effect of the necks overlapping and the distance to the bore in the adjacent web are calculated; $(\beta_\sigma)_\Delta$ is found with the formula

$$(\beta_\sigma)_\Delta = 1 - (\xi_\sigma)_b \left[1 - (\beta'_\sigma)_\Delta \right], \quad (5)$$

where $(\beta'_\sigma)_\Delta$ is the $(\beta_\sigma)_\Delta$ factor for analogous crank with $\frac{b}{d} = 1.6$, from Fig. 5a; and $(\xi)_b$ - correction factor depending on $\frac{b}{d}$, from Fig. 5 b. Before finding $(\beta_\sigma)_L$, the optimum distance to the bore in adjacent neck $\frac{L^*}{r}$ must be found in Fig. 6 a. The $(\beta_\sigma)_L$ factor is found from Fig. 6 b if the real distance to the bore is larger than optimum (i.e., $\frac{L}{L^*} > 1$), and from Fig. 6 c if it is below 1. Experi-

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mental data of Ref. 7 (W. C. Gadd, T. C. van Degrift, A Short Gage-Length Extensometer and its Application to the Study of Crankshaft Stress, "J. of Applied Mechanics", March 1942, v. 9, no. 1) were alsp utilized for plotting the curves (Fig. 6). Finally the stress concentration in the fillet of the real crankshaft at bending in the crank plane is calculated with the formula

$$\alpha = (\alpha^*_\sigma)_\Delta = 0 \; (\beta_\sigma)_\Delta \; (\beta_\sigma)_L \qquad (6)$$

In the case of barrel-shaped bores, d_1 must be replaced by d_2 in the calculation of the stress concentration factor (α_τ) for torsion. It is first to be found for stepped axisymmetrical shaft with same $\frac{r}{d}$ and $\frac{d_1}{d}$ as in the sought-for crank and $\frac{D}{d} = 2$. The formula for tangential stress concentration factor in the sought-for shaft at torsion is

$$\alpha_\tau = (\alpha_\tau)_o \; (\beta_\tau)_b \; (\beta_\tau)_h \; (\beta_\tau)_\Delta \qquad (7)$$

Factors to the formula (7) are given in (Fig. 8). The formulae (3) and (6) originate from author's previous works listed in bibliographic references. A practical calculation example is included. There are 9 figures and 7 references: 6 Soviet-bloc and 1 non-Soviet bloc. The reference to the English-language publication is cited in text.

Card 3/5

LEYKIN, A.S.

Perchlorovinyl-cement compositions for the painting and waterproofing of structural surfaces. Lakokras.mat.i ikh prim. no.1:36-41 '61.
(MIRA 14:4)

(Building materials) (Insulating materials)
(Paint materials)

LEYKIN, A.S.

Determination of the wear of paint coatings. Lakokras.mat.i ikh prim. no.1:64-67 '62. (MIRA 15:4)
(Paint--Testing)

41894

S/740/62/000/009/001/002
E191/E135

26.2122

AUTHOR: Leykin, A.S.

TITLE: Non-stationary thermal elasto-plastic stresses in a hollow cylinder with a surface temperature varying exponentially with time

SOURCE: Akademiya nauk SSSR. Institut mashinovedeniya. Problemy prochnosti v mashinostroyenii. no.9, 1962. 57-72

TEXT: The problem of non-steady-state heat conduction is solved for the hollow cylinder under boundary conditions expressed as arbitrary exponential polynomials, which take into account the possible lag of the beginning of temperature variation at the colder surface of the body. Initially, the infinite hollow cylinder has a stationary temperature field, wherein the temperature varies logarithmically with the radius. A varying temperature gas flow inside and a cooling air flow outside create surface temperature variations following different exponential laws. On the assumption of purely radial heat flow, the heat conduction equation and the initial and boundary conditions are formulated.

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Non-stationary thermal elasto- ...

A Laplace transformation with respect to time is applied to the difference between the variable temperature and the initial temperature of the cycle. An ordinary differential equation is obtained for the transform, whose solution is given in a general form using Bessel functions. The solution for the temperature is derived by an inverse Laplace transformation. The ratio of the difference between the actual and initial temperatures to the largest temperature increment on the inner (hot) surface is written down. Simplification of the expressions in a special case is discussed. The thermo-elastic stresses are derived using the general equations of the theory of elasticity on the assumption that neither Young's modulus nor the coefficient of thermal expansion are dependent on the radius. The thermal stresses in the elasto-plastic region are derived by an approximate method on the assumption that the effective Poisson's ratio has the value of 0.5. This assumption has been shown earlier by R.S.Kinasoshvili (Raschet na prochnost' diskov turbomashin. "Stress analysis of discs in turbo-machinery", Oborongiz, 1954) to agree well with observations of elasto-plastic deformations of turbine discs at

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Non-stationary thermal elasto- ...

high temperatures. The hollow cylinder is divided into several concentric tubes, each with a constant effective Young's modulus. An elastic analysis is applied first. For a given instant in the heating or cooling cycle, the stress values are found at the mean radii of the tubes from the known temperature distribution along the radius and from graphs giving the variation of Young's modulus and the thermal expansion coefficient with temperature. Some auxiliary integrals and functions are computed by combining graphical and analytical methods. These enter into the expressions for the principal stresses, from which the equivalent "octahedral" normal stress is computed. If the equivalent stress exceeds the yield stress, the strain is first derived from the "elastic" stress, then the true stress corresponding to the above strain is found from the stress-strain curve measured in pure tension and, finally, the secant modulus is computed. With this secant modulus, the principal stresses and equivalent stress are derived again until the approximation process converges. A numerical example applies the analysis to conditions similar

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to those in gas turbine blade tests. The temperature changes most rapidly at the start of the heating (cooling) cycle. The highest equivalent stress is reached after six seconds of heating. Its "elastic" value is 54 kg/mm^2 and the true "plastic" value is 25 kg/mm^2 at a longitudinal strain of 0.005.
There are 8 figures.

Card 4/4

LEYKIN, A.S., kand. tekhn. nauk; VINOGRADOV, B.N., inzh.

Study of hydration and hardening processes of emulsified polymer mineral mortars. Sbor. trud. VNIINSM no.8:57-64 '63. (MIRA 17:9)

LEYKIN, A.S., kand.tekhn.nauk; PESEL'NIK, V.Ye., kand.tekhn.nauk

Protective coatings for air-entrained silicate slabs of exterior walls. Stroi. mat. 9 no.2:15-16 F '63. (MIRA 16:2)
(Sand-lime products) (Protective coatings) (Walls)

LEYKIN, A.S., kand.tekhn.nauk

Stress distribution caused by the bending of herringbone joints of turbomachine blades. Vest.mashinostr. 44 no.1:22-31 Ja '64. (MIRA 17:4)

S/0122/64/000/003/0026/0032

ACCESSION NR: AP4026245

AUTHOR: Leykin, A. S. (Candidate of technical sciences)

TITLE: Construction methods to improve strength of christmas tree locks in turbine blades under variable loads

SOURCE: Vestnik mashinostroyeniya, 44 no. 3, 1964, 26-32

TOPIC TAGS: christmas tree lock, turbine blade, rotor disk, stress concentration, vibration damping, nonuniform stress distribution

ABSTRACT: Different ways of improving the strength of christmas tree locks joining turbine blades to the rotor disk have been discussed. To reduce the local stress on the trough (space between teeth) of the lock the radius of curvature is increased and the surface of the tooth is beveled. This lowers the coefficient of stress concentration by 20-25%. An attempt is made to redistribute the reaction force on the lock teeth by making the coefficient of linear expansion α of the disk material larger than α of the blade material. A nominal clearance δ_0 is suggested in a 6-5 pair of christmas tree lock teeth to hold the coefficient of reaction force nonuniformity below a given level. It is shown that the clearance

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ACCESSION NR: AP4026245

δ_0 expresses the difference in dimension between the tooth pitch of the disk and the blade roots, at working temperatures, relative to the unit length of the christmas-tree lock profile line. To minimize nonuniform stress distributions the parameter $l_0 = L/b$ is increased (b - blade chord, L - distance from top of lock surface to the first trough). To improve rotor blade vibration damping in the blade-lock coupling, the addition of a band of rods is suggested on the blade-to-joint coupling rack, or a split root for the rotor blades. The adverse effects caused by such damping techniques are discussed, in particular when they create local stress concentration in blade roots or the lock. Orig. art. has: 6 equations and 6 figures.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 20Apr64	ENCL: 00
SUB CODE: MD	NO REF SOV: 005	OTHER: 002

Card 2/2

LEYKIN, A.S., kand. tekhn. nauk

Strength calculation of shaped parts by extreme reduced effective stresses. Vest. mashinostr. 44 no.8:9-16 Ag '64.

(MIRA 17:9)

ACCESSION NR: AT4046185

AUTHOR: Blinnik, B. S. , Leykin, A. S.

TITLE: The design of working turbine blades with [illegible] flanges

SOURCE: [illegible] p. 123-129

TOPIC TAGS: turbine blade, turbine blade design, blade cent of, turbine blade

ABSTRACT: The authors note that in order to raise the rigidity of RDS turbines, [illegible] estimation of the stresses in the flanges [illegible] the complication of the reduction of negative allowan[illegible] flanges because of the

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L 14956-65

ACCESSION NR: AT4046185

...wing of the disk and blades under ... [illegible] ... and temperature. The increase in allowance as a result ... [illegible] ... is ... ally described ... [illegible] ...

... [illegible] ... 85 mm are given for the ... [illegible] ... between the interfaces of ... arges under operating ... [illegible] ... figures and ... [illegible] ...

ASSOCIATION: None

SUBMITTED: 15Apr64 ENCL: 01 SUB CODE: PR

NO REF SOV: 005 OTHER: 002

Card 2/3

L 11956-65

ACCESSION NR: AT4046185

ENCLOSURE 01

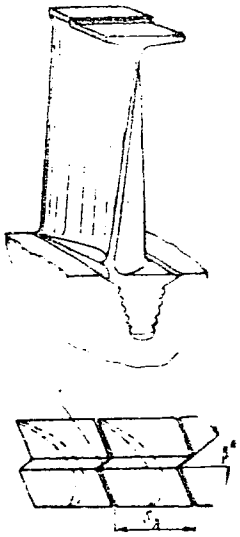

Figure 1. Working turbine blade with banded peripheral flanges: 1 - coupled banded flanges of

Card 3/3

ACCESSION NR: AT4046191

AUTHOR: Leykin, A. S.

TITLE: Stress concentration and relative stress distribution factors in the fishbone locking mechanisms of turbine blades

SOURCE: Prochnost' i dinamika aviatsionnykh dvigateley (Durability and dynamics of aircraft engines); sbornik statey, no. 1. Moskva, Izd-vo Mashinostroyeniye, 1964. 277-288

TOPIC TAGS: turbine blade, turbine blade coupling, turbine blade stress, fishbone catch

ABSTRACT: The author notes that the fatigue character of the majority of failures observed in the fishbone-type locking devices which are used to couple the blades to the disks in turbines requires a careful investigation of the concentration and distribution of stresses on the surfaces of the joint element re-
[illegible] particularly under bending conditions. A number of experimental studies of
[illegible] concentration and distribution, primarily using the polarization-optical
[illegible] and for situations of tensile [illegible] are cumbersome and sometimes
[illegible] present article, the author tries to [illegible]

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L 24415-65
ACCESSION NR: AT4046191

O

stress concentration and distribution on the surfaces of the recesses or depressions of locking devices of the fishbone type under the effect of both bending and stretching. These results were obtained by the author on the basis of previous experiments (A. S. Leykin. Issledovaniye raspredeleniya napryazheniy v velochnykh [illegible] lopatok turbin pri rastyazhenii i izgibe. [illegible] materialov konstruktsiy. Izd. AN SSSR, M[illegible] and also certain other supplementary experiments using the tensiometric method on large, flat, metal models with elastic deformation of the materials. In a manner applicable to the ratios of the geometric dimensions characteristic of fishbone locking mechanisms, general formulae are proposed for dimensionless factors of stress concentration and relative [illegible]tion as a function of the basic geometric parameters of the lock or retaining coupling joint. The formulae are simple in form and provide the degree of accuracy required for practical engineering calculations. Figure 1 of the Enclosure shows diagrams of the force interaction of the elements of a fishbone-type joint of the type considered [illegible] under the influence of stretching with preliminary [illegible] and also under that of increase in stresses on the surfaces of the recesses of the fishbone-type [illegible]

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ACCESSION NR: AT4046191

the teeth. Some numerical recommendations are given. Orig. art. has: 7 figures and 33 formulas.

ASSOCIATION: None

SUBMITTED: 15Apr64 ENCL: 01 SUB CODE: PR

NO REF SOV: 007 OTHER: 001

Card 3/4

LEYKIN, A.S., kand. tekhn. nauk

Method of applying paint with the PIKP-1 device. Sbor. inform. soob. VNIINSM no.15:44-46 '62.

Method of determining the wear resistance of lacquered and painted surfaces. Ibid.:54-55

Using emulsion polymer cement as a protective coating for cellular concrete. Ibid.:59-65

(MIRA 18:3)

ACC NR: AP6036882 (A,N) SOURCE CODE: UR/0122/66/000/011/0007/0011

AUTHOR: Leykin, A. S. (Doctor of technical sciences)

ORG: none

TITLE: Increasing the strength of machine parts by optimization of stress distribution

SOURCE: Vestnik mashinostroyeniya, no. 11, 1966, 7-11

TOPIC TAGS: stress distribution, machine tool, machine industry

ABSTRACT: Optimization of stress distribution in machine parts can be attained by lowering the local stress concentration, by decreasing the total nonuniformity of stress distribution, by disposition of the sources of local stress concentration at points where the total nonuniformity of the stress distribution is lowered, by a relative displacement of the points of greatest stress in the concentration zones, and by regulating the distribution of the forces in multitooth joints. The article consists of a mathematical treatment of several of these methods of reducing the stress concentration. Optimization of the stress distribution by the method of "regulating" the distribution of forces is illustrated in the article by the examples of herringbone joints in turbine blades and of screw joints. Here, the calculations show that by optimization of the static and variable stresses, connected with a partial unloading of the first teeth, the strength of a joint, with respect to the amplitude of the

UDC: 621.81:539.4

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ACC NR: AP6036882

stresses, can be increased by 20-35%. In the same manner, by analogy with herringbone joints, the load on screw threads must be so distributed that the first turn of the thread is subjected to relatively small forces. Orig. art. has: 5 figures.

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 006

Card 2/2

BRYZZHEV, L.D.; BURDUN, G.D.; LEYKIN, A.Ya.; OKHOTINA, S.M.; SIMKIN, G.S.; SHPAN'ON, P.A.

Precise determination of the units of time and frequency by means of atomic constants. Izm. tekh. no.3:3-9 My-Je '55. (MLRA 8:9)
(Time measurements)

LEYKIN, A.YA.

24(0); 5(4); 6(2) PHASE I BOOK EXPLOITATION SOV/2215

Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii imeni D.I. Mendeleyeva

Referaty nauchno-issledovatel'skikh rabot; sbornik No.2 (Scientific Research Abstracts; Collection of Articles, Nr 2) Moscow, Standartgiz, 1958. 139 p. 1,000 copies printed.

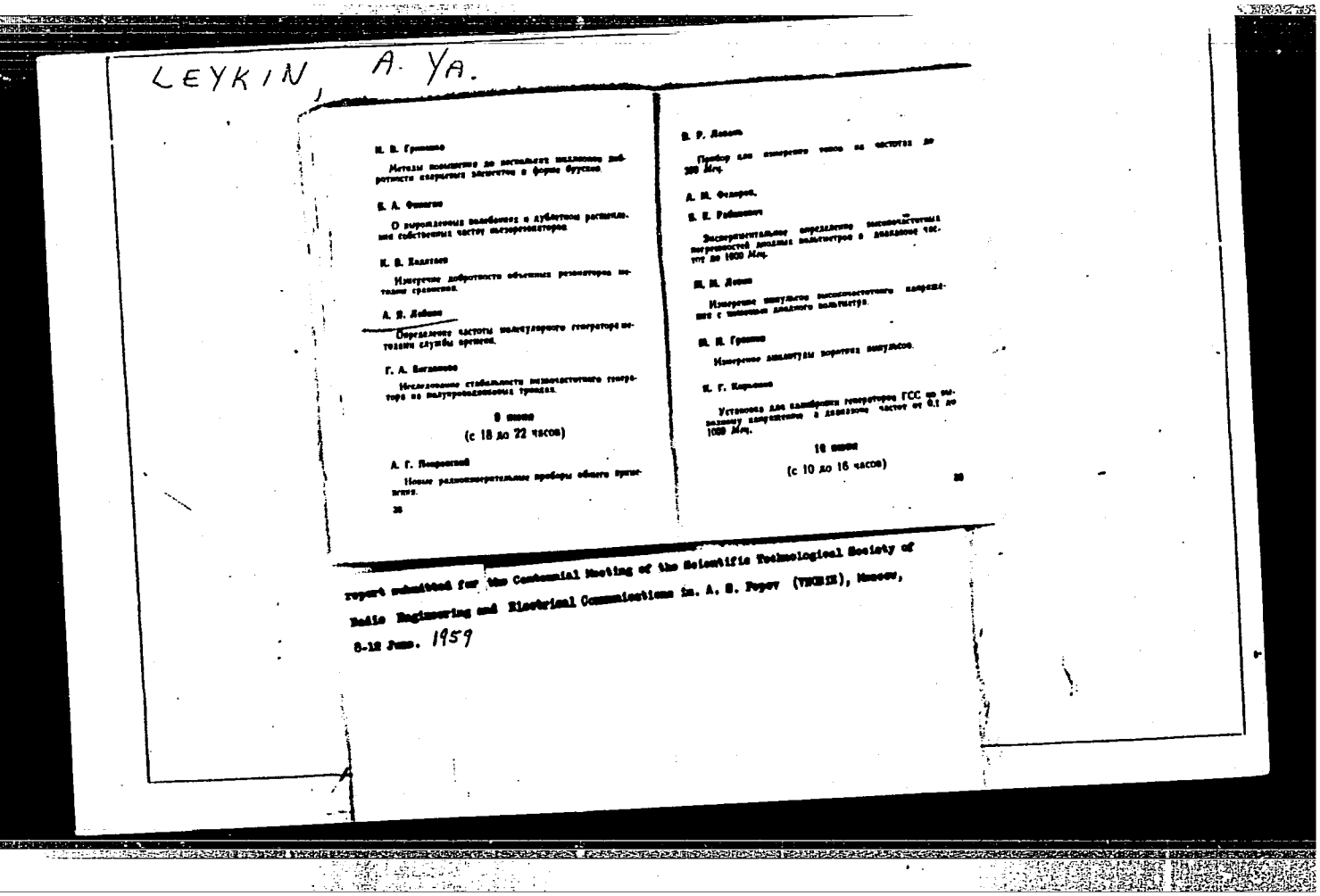
Additional Sponsoring Agency: USSR. Komitet standartov, mer i izmeritel'nykh priborov.

Ed.: S. V. Reshetina; Tech. Ed.: N. A. Kondrat'yeva.

PURPOSE: These reports are intended for scientists, researchers, and engineers engaged in developing standards, measures, and gages for the various industries.

COVERAGE: The volume contains 128 reports on standards of measurement and control. The reports were prepared by scientists of institutes of the Komitet standartov, mer i izmeritel'nykh priborov pri Sovete Ministrov SSSR (Commission on Standards, Measures, and Measuring Instruments under the USSR Council of Ministers). The participating institutes are: VNIIM - Vsesoyuznyy nauchno-issledovatel'skiy metrologii imeni D.I. Mendeleyeva (All-Union Scientific Research Institute of Metrology imeni D.I. Mendeleyev) in Leningrad; Sverdlovsk branch of this institute; VNIIK - Vsesoyuznyy nauchno-issledovatel'skiy institut Komiteta standartov, Mer i izmeritel'nykh priborov (All-Union Scientific Research Institute of the Commission on Standards, Measures, and Measuring Instruments), created from MOIMIP - Moskovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Moscow State Institute of Measures and Measuring Instruments); and MOIMIP - Moskovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Moscow State Institute of Measures and Measuring Instruments) October 1, 1955; VNIIFTRI - Vsesoyuznyy nauchno-issledovatel'skiy institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy (All-Union Scientific Research Institute of Physicotechnical and Radio-engineering Measurements) in Moscow; KhOIMIP - Khar'kovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Khar'kov State Institute of Measures and Measuring Instruments); and MOIMIP - Moskovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Moscow State Institute of Measures and Measuring Instruments). No personalities are mentioned. There are no references.

Frequency Service



LEYKIN, A. YA.

Report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (NTORESS), Moscow, 8-12 June. 1959

SOV/115-59-7-20/33

8(3), 9(3)

AUTHOR: Leykin, A.Ya.

TITLE: The Experimental Investigation of a Molecular Generator

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 7, pp 41-44 (USSR)

ABSTRACT: In 1956 and 1957, the Khar'kovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Khar'kov State Institute of Measures and Measuring Instruments) built a number of masers (molocular generators). The results of investigating these masers are presented in this article. In two maser models, developed by N.G. Basov (Ref.1) at FIAN SSSR imeni P.N. Lebedev, several design changes were introduced, while their electrical parameters were kept. A grid with long channels (1.3-1.5 mm at a diameter of 0.05 mm) was used as a beam source. A very even tuning of the resonator was achieved by a system consisting of a thin and thick rod as shown in fig.1. Two generators were mounted in one common vacuum housing as this was done in one of the FIAN masers. The oscillation amplitude was measured by means of a device, whose block diagram is represented in fig.2. Measurements were made concerning oscillation amplitude dependences on the resonator tuning (the ammonia

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The Experimental Investigation of a Molecular Generator

pressure in the source was kept equal to p ≃ 2 mm mercury column and the voltage at the quadrupole capacitor U ≃ 32 kv), on the ammonia pressure in the beam source (with mean tuning and U ≃ 32 kv) and on the voltage of the quadrupole capacitor (P ≃ 2 mm mercury column. The pressure in the beam source was measured by a U-shaped mercury pressure gage. Frequency changes in the maser under investigation during retuning of its resonator were determined by comparing the frequency difference between two masers. The results of these measurements, presented in fig.3, show that the oscillation amplitude changes as a function of the resonator tuning according to electric load. With an ammonia pressure increase in the beam source, the oscillation amplitude increases and decreases after reaching its peak. Further, the oscillation frequency was investigated by means of a measuring unit as shown in the block diagram, fig.4. The author also investigated the relative stability of maser frequencies. The resonator Q-factor were Q_1-8,000 and Q_2-5,000 respectively. The cooling system was filled with liquid nitrogen one hour prior to the begin of the measurements. Fig.5 a, contains results of frequency change measurements

The Experimental Investigation of a Molecular Generator

of the oscillator with ammonia pressure increasing from 1.5 to 5 mm mercury column. Fig.5 b shows the voltage change at the focusing electrodes from 20 to 30 kv for three fixed tuning ranges. The investigations show that the described maser has a highly constant frequency and good operational qualities. For obtaining the one or other absolute frequency value, the ammonia pressure should be changed for tuning the resonator. The accuracy of reproducing absolute frequency values by a maser using this method, depending on different factors, will be investigated in the future. A.I. Samoilovich participated in design of the maser model. M.I. Klyus joined in assembling the maser. Ye.Z. Orlov assisted in recording the measuring results. There are 4 graphs, 2 block diagrams, 1 diagram and 5 references, 3 of which are Soviet and 2 American.

SOV/115-59-8-23/33

25(1)

AUTHOR: Leykin, A. Ya.

TITLE: A System of Comparing the Frequency of a Maser With a Quartz Standard

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 8, pp 43 - 44 (USSR)

ABSTRACT: At the Kharkovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov -KhGIMIP- (Khar'kov State Institute of Measures and Measuring Instruments), a special device was designed and built for comparing the maser frequency with the frequency of a high-stability quartz generator. The frequency of the quartz reference generator at KhGIMIP is 60 kc. Increasing this frequency to that of the maser (23170 Mc) requires a great frequency multiplication and is connected with considerable difficulties. The author describes the application of an auxiliary quartz generator having a frequency of 3.1 Mc. The author describes this device briefly. Its block diagram is shown in Figure 1. The signal with a frequency of 1.3 Mc from the quartz generator is mixed with the signal of the maser after multiplication by 7,700

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A System of Comparing the Frequency of a Maser With a Quartz Standard

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times. By means of the described device comparisons of the maser frequency with the quartz reference generator are conducted regularly at KhGIMIP. In a table the author presents the results of one measuring series which were obtained with unchanged tuning of the maser. The table shows that the mean square error of a series of frequency measurements amounts to $\sim 1 \times 10^{-10}$. However, this error includes also the unstability of the quartz reference generator. For simplifying the measuring process and eliminating the unstability of the auxliary quartz generator, a second version of the frequency comparison system was developed, shown in the block diagram in Figure 2. It is different from the first version by the inclusion of a frequency multiplicator with a gain factor of 700 and a mixer. I. V. Baulin built and tested the auxiliary quartz generator. Ye. Z. Orlov participated in the construction and investigation of the entire comparison system. There is 1 table and 1 block diagram.

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S/033/60/037/03/020/027
E032/E514

3.9000

AUTHORS: Bryzzhev, L.D., Leykin, A.Ya. and Sopel'nikov, M.D.

TITLE: A Determination of the Frequency of a Molecular Generator and of the Irregularities in the Earth's Rotation

PERIODICAL: Astronomicheskiy zhurnal, 1960, Vol 37, Nr 3, pp 579-583 (USSR)

ABSTRACT: The molecular generator employing a beam of ammonia molecules at the Khar'kov State Institute of Measures and Measuring Instruments was described by Leykin in Ref 3. Systematic measurements of the frequency of this generator were begun in February, 1958. Regular comparisons of its frequency in the UT-1 and UT-2 systems of astronomical time were also carried out. The molecular generator in the above standard does not function continuously and is only "switched on" for a time necessary for the comparison with quartz generators. It was therefore necessary to have continuously running clocks in order to determine the frequency in the astronomical time system. KKh-3 clocks were used for this purpose. These clocks are employed by the All-Union

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S/033/60/037/03/020/027
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A Determination of the Frequency of a Molecular Generator and of the Irregularities in the Earth's Rotation

Time Service and the All-Union Scientific Research Institute for Physicotechnical and Radiotechnical Measurements who publish monthly corrections to these clocks in the bulletin "Standard Time". Moreover, daily time signals transmitted by the GBZ-10[h] Station (England) are also used in the determination of these corrections. These are further corrected in accordance with the data supplied by the Greenwich Observatory. The frequency of the generator in the [11] KKh, clocks [12] was daily compared with the frequency of ~~the molecular~~ generator. A preliminary value for the frequency of the molecular generator, based on the data supplied by the time services of the Soviet Union and Great Britain, is now reported to be 23 870 129.395 kc/s ± 0.012 kc/s. Data on the irregularities in the Earth's rotation in 1958 were obtained from the determination of the frequency of the molecular generator in astronomical

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S/033/60/037/03/020/027
E032/E514

A Determination of the Frequency of a Molecular Generator and of the Irregularities in the Earth's Rotation

systems of time. It was found that the amplitude and phase of seasonal irregularities in the Earth's rotation during 1958 were practically the same as those in 1955-1956. The latter were obtained with the aid of the caesium standard. It is argued that the results obtained show that irregularities in the Earth's rotation can be determined with the aid of the molecular generator to the same accuracy as with the caesium standard.

There are 3 figures and 5 references, 2 of which are Soviet, 1 French and 2 English.

ASSOCIATION: Khar'kovskiy gosudarstvennyy in-t mer i izmeritel'nykh priborov (Khar'kov State Institute of Measures and Measuring Instruments)

SUBMITTED: October 6, 1959

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4

POLULYAKH, Konstantin Stepanovich; LEYKIN, A.Ya., retsenzent; SKORIK, Ye.T., retsenzent; SHVETSKIY, B.I., retsenzent; TSAPENKO, V.T., otv. red.; TRET'YAKOVA, A.N., red.; ALEKSANDROVA, G.P., tekhn. red.

[Electronic resonance measuring devices] Elektronnye rezonansnye izmeritel'nye pribory. Khar'kov, Izd-vo Khar'kovskogo gos. univ. im.A.M.Gor'kogo, 1961. 138 p. (MIRA 14:12)
(Electronic measurements) (Radio measurements)

30159
S/609/61/000/003/008/008
D039/D112

9,2582 (also 1163)

AUTHOR: Leykin, A. Ya.

TITLE: A molecular standard of time and frequency

SOURCE: Akademiya nauk Ukrains'koyi RSR. Organizatsionnyy komitet po provedeniyu Mezhdunarodnogo geofizicheskogo goda. Mezhdunarodnyy geofizicheskiy god; informatsionnyy byulleten', no. 3, 1961, 82-87

TEXT: The paper describes a molecular standard of time and frequency developed by the Khar'kovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Khar'kov State Institute of Measures and Measuring Instruments). The basis of this device is a molecular generator, operating on a beam of ammonia molecules which was developed by N. G. Basov and A. M. Prokhorov. The paper also gives the methods of reproducing the frequency of the molecular standard; the first results of comparisons of the frequency of the molecular generator with that of quartz generator No 3 of the Khar'kov State Institute of Measures and Measuring Instruments, which have been regularly conducted since February 5, 1958, and resultsof determination of the frequency of the molecular generator within the UT-1 and UT-2 astronomic time systems.

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A molecular standard of time ...

The electrical parameters of the new molecular generator are the same as those of the molecular generator of the Fizicheskiy institut AN SSSR im. P. N. Lebedeva (Physics Institute of the AS USSR im. P. N. Lebedev) which is mentioned in the paper of N. G. Basov (Ref. 3 "Pribory i tekhnika eksperimenta", t. 1, 1957, s. 71). A grid with long holes, the production technology of which was proposed by A. I. Samoylovich, was used in the beam source. The resonator of the molecular generator has a mechanical two-stage (rough and smooth) tuning system for smooth tuning within a small range. The tuning method was based on the fact that the dependence of the generator's frequency on the ammonia pressure in the molecular beam source is higher by one order than its dependence on the voltage on the quadrupole capaciter. The resolving power of the tuning method was rated as being of the order of $3 \cdot 10^{-10}$. As comparison of the molecular generator and the quartz generator was complicated by the great difference in the frequencies of both devices, a comparator with an auxiliary high-stability quartz generator, frequency amplifiers and counters, was developed. On the basis of the counter recordings, the value of the quartz generator frequency with respect to the frequency of the molecular generator was found from the formula

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A molecular standard of time ...

$$f_{std} = \frac{f_{mol\ gen} + F_2 - 700F_1}{238\ 700},$$

where f_{std} is the frequency of the quartz generator of the standard frequency in hundreds of kilocycles; $f_{mol\ gen}$ - the frequency of the molecular generator; F_1 and F_2 - the beat frequencies. The quartz generator used for comparison with the molecular generator has been operating without interruption since 1950. Its mean quadratic variation per 24 hours is of the order of $6 \cdot 10^{-10}$. It is used as the standard clock (KKh_3) of the Sluzhba vremeni Sovetskogo Soyuza (Time Service of the Soviet Union). The measurements were conducted with two molecular generators, the mean quadratic deviation of whose difference frequency from the mean deviation was established. Apart from this, the frequency of the quartz generator is determined every day by the reception of time signals transmitted by various stations including the GBR. This makes it possible to determine the frequency of the molecular generator in the same time system in which the signals are transmitted. Since the UT-1 and UT-2 time systems are associated with the speed of the

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A molecular standard of time ...

Earth's rotation, and since the frequency of the molecular generator is constant and independent from the Earth's rotation, variations in the rotation speed of the Earth can be found by such comparisons. The first results of measuring the molecular generator frequency within the UT-1 and UT-2 systems are given. The results show that in spring 1958 there was no usual decrease in the rotation speed of the Earth, which agrees with the data given in the report of Wm. Markowitz read at the X Astronomical Conference. In conclusion, the author thanks L. D. Bryzzhev for his valuable advice and his participation in the discussion of the results, and Ye. Z. Orlov, A. I. Samoylovich, I. V. Baulin and M. I. Klyus, who helped in the construction of the molecular generator, the development of the comparator and in conducting the comparisons. There are 4 figures and 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The three references to English-language publications read as follows: L. Essen, I. V. L. Parry, The Caesium Resonator as a Standard of Frequency and Time, Phil. Trans. Roy. Soc. L., Sec. A, No 973, vol. 250, p. 45, 1957.; L. Essen, I. V. L. Parry, Wm. Markowitz, R. C. Hall, Variation in the Speed of Rotation of the Earth Since June 1955, Nature, vol. 181, p. 1054, 1958.; I. P. Gordon, H. I. Zieger, C. H. Townes, The Maser - New Type

Card 4/5

S/169/62/000/002/001/072
D228/D301

AUTHORS: Sopel'nikov, M. D., Leykin, A. Ya. and Bryzzhev, L. D.

TITLE: Determining the irregularity of the earth's rotation by means of a molecular time and frequency standard

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 2, 1962, 3, abstract 2A1 (Mezhdunar. geofiz. god, Inform. byul., no. 4, 1961, 29-32)

TEXT: The results are described for determining the irregularity of the earth's rotation by means of a molecular generator, introduced into the time and frequency work of the Khar'kovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Khar'kov State Institute of Measures and Measuring Instruments) from February 1958. The magnitude of the irregular and seasonal changes in the length of a day is cited, and corrections are given for the transition from UT-1 time to UT-2 time for the interval March 1958 - March 1959. [Abstracter's note: Complete translation.]

Card 1/1

S/115/63/000/002/005/008
E202/E492

AUTHORS: Leykin, A.Ya., Orlov, Ye.Z.

TITLE: Coincidence of frequency values in molecular generators of similar constructions

PERIODICAL: Izmeritel'naya tekhnika, no.2, 1963, 46-48

TEXT: The authors used four identically constructed molecular generators contained in pairs in one general vacuum shell. Each aggregate was supplied with electronic equipment which tuned the frequency of the generator according to the minimum changes in the pressure of ammonia in the source of the molecular beam and compared this molecular frequency with that of quartz generators. Details of preliminary tuning are given. The pressure of ammonia was so chosen that the amplitude of generation was at its maximum. In order to determine the effect of the voltage on the quadrupole condenser, the beat frequency was measured between the two molecular generators. At the same time the voltage on the quadrupole condenser of one generator was fixed at 35 kV, while that of the other varied from 22 to 37 kV. The measurements have shown that changes in voltage of 15 kV cause frequency changes of 70 c/s. Simultaneous frequency measurements on the standard

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quartz generator and the molecular generators were carried out for a period of three weeks; each molecular generator was tuned and the difference between the standard and molecular generators measured. Approximately 10 to 12 measurements were taken on each of the molecular generators. The results of these measurements show that the mean arithmetic deviation of frequencies of the individual generators was of the order of about 0.1 while the mean quadratic deviation was of the order of 1×10^{-9}. It was concluded that using this method of tuning, it is possible to attain a frequency with a mean quadratic error of 1×10^{-9}. It is stated that when subjected to the above procedure, molecular generators may be operating with the same frequency accuracy as that which is ascribed to the standard generator. There are 5 tables.

VALITOV, R.A. Prinimali uchastiye: LEYKIN, A.Ya.; SIDORENKO, B.G.; KUKOLEVA, T.V., red.; [redacted], tekhn. red.

[Radio-engineering measurements] Radiotekhnicheskie izmereniia. Moskva, Sovetskoe radio, 1963. 631 p. (MIRA 16:8)

(Radio measurements)

43

Abram Yefimovich; Petrovskiy, ... Borodin, Boris ...

Aircraft material science (Aviatsionnoye materialovedeniye) Moscow, Izd-vo "Mashinostroyeniye", 1964. 458 p. illus., biblio. Errata slip inserted. 4600 copies printed.

TOPIC TAGS: aircraft material, aircraft nonmetallic materials, ferrous metal material, sintered material

PURPOSE AND COVERAGE: This textbook is intended for students at tekhnikums. It may also be useful to technicians of the aircraft industry. The book reviews ... characteristics ... aircraft structures ... heat treatment ... The authors ... references ...

TABLE OF CONTENTS (Abridged):

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AP5004014

Card 4/5

AM5004014

Ch. 26. Textiles -- 415

Ch. 27. Lac-dye materials -- 424

Ch. 28. Binding and sealing materials -- [illegible]

Bibliography -- 454

SUB CODE: MM, MT SUBMITTED: 14Sep64 NO REF SOV: 011

OTHER: 002

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BENDERSKIY, S.N., kand.tekhn. nauk; BURSIAN, V.R., prof., kand. tekhn. nauk; VASIL'YEV, P.N., inzh.; DORFMAN, E.Ye., inzh.; ZHURAVLEV, V.F., kand. tekhn. nauk; KESTEL'MAN, V.N., inzh.; KRUGLOV, A.N., dots., kand. tekhn. nauk; KUKIBNYY, A.A., dots., kand.tekhn. nauk; LEVACHEV, N.A., dots., kand. tekhn. nauk; LEYKIN, A.Ya., inzh.; NAREMSKIY, N.K., dots., kand. tekhn. nauk; PLATONOV, P.N., prof., doktor tekhn. nauk; SOKOLOV, A.Ya., prof., doktor tekhn. nauk; KUTSENKO, K.I., kand. tekhn. nauk, dots., retsenzent; VEREMEYENKO, Ye.I., inzh., retsenzent; KOVTUN, A.P., inzh., retsenzent; SEMENYUK, A.I., retsenzent; KASHCHEYEV, I.P., inzh., retsenzent; PAL'TSEV, V.S., kand. tekhn. nauk, retsenzent; KHMEL'NITSKAYA, A.Z., red.

[Conveying and reloading machinery for the overall mechanization of the food industries] Transportiruiushchie i peregruzochnye mashiny dlia kompleksnoi mekhanizatsii pishchevykh proizvodstv. Moskva, Pishchevaia promyshlennost', 1964. 759 p. (MIRA 18:3)

(Continued on next card)

BENDERSKIY, S.N.—— (continued). Card 2.

1. Odesskiy tekhnologicheskiy institut imeni M.V.Lomonosova (for Kutsenko, Naremskiy, Veremeyenko, Kovtun). 2. Starshiy ekspert Upravleniya po avtomatizatsii i oborudovaniyu dlya pishchevoy promyshlennosti Gosudarstvennogo komiteta po mashinostroyeniyu pri Gosplane SSSR (for Semenyuk). 3. Glavnyy mekhanik Gosudarstvennogo instituta po proyektirovaniyu predpriyatiy mukomol'nokrupyanoy i kombikormovoy promyshlennosti i elevatorno-skladskogo khozyaystva (for Kashcheyev). 4. Zaveduyushchiy laboratoriyey Vsesoyuznogo nauchno-issledovatel'skogo instituta zerna i produktov ego pererabotki (for Pal'tsev).

IVANOV, A.I.; LEYKIN, A.Ya.; KHUVES, E.S.; CHERNYY, M.S.;
KLEYMAN, L.M., red.

[Machines for overall mechanization of grain loading and unloading operations] Mashiny dlia kompleksnoi mekhanizatsii pogruzochno-razgruzochnykh rabot s zernom. Moskva, Kolos, 1964. 230 p. (MIRA 18:9)

L 02365-67 EWT(1)/EEC(k)-2/T/EWP(k) IJP(c) WG
ACC NR: AP6032005 SOURCE CODE: UR/0115/66/000/009/0028/0030

AUTHOR: Leykin, A. Ya.; Samoylovich, A. I.; Solov'yev, V. S. 51 B

ORG: none

TITLE: A stable cw gas laser 15

SOURCE: Izmeritel'naya tekhnika, no. 9, 1966, 28-30

TOPIC TAGS: cw laser, gas laser, metrology

ABSTRACT: A stable, single-frequency, dc-excited He-Ne laser has been developed by the Kharkov Institute of Measures and Measuring Instruments for use in metrology. Because of the required single-frequency characteristic, the amplifying medium is designed to damp both higher-order oscillations and extraneous longitudinal modes; emission is confined to the TEM_{q00} type of oscillations. This provides for a minimum of 4—5 axial modes being generated simultaneously within the Doppler width of the $3s_2$—$2p_4$ line. The damping of all the longitudinal modes except those at line center is accomplished by specifying losses which are introduced into the resonator cavity by various elements. The resonator cavity (Fig. 1) contains a small-diameter capillary (1.5 mm) for the

Card 1/3 UDC: 621.375.9

given cavity configuration which insures losses ten times higher for transverse than for basic oscillations. The 300-mm discharge gap

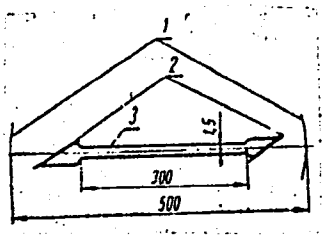

Fig. 1. Resonator cavity configuration

1 - Mirrors; 2 - Brewster windows; 3 - capillary

insures emission conditions for only one longitudinal type of oscillations at the given gain of 12%—13% and a pumping level only slightly exceeding threshold. The resonator cavity is formed by spherical mirrors with dimensions $R_1 = R_2 = 580$ mm. A stable output power of

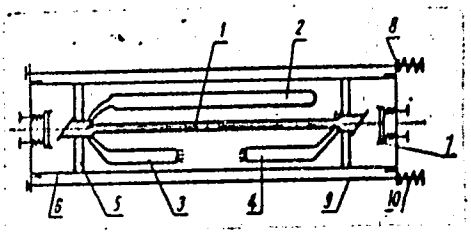

Fig. 2. Laser configuration

1 - Discharge tube; 2 - reserve tube; 3 and 4 - cathode and anode tubes; 5 - holders; 6 - quartz tube; 7 - mirror holders; 8 - end flanges; 9 - steel couplers; 10 - springs

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0.3—0.5 mm in several modes or 0,05—0.1 mm in a single oscillating mode was obtained. Study of the laser emission spectrum with a Fabry-Perot interferometer with scanning mirrors, and with a 150 mm Fabry-Perot standard revealed that four oscillating modes can be generated simultaneously; by lowering the pumping power level, the number of modes can be reduced to two. The laser emission can be brought down to a single mode by reducing both pumping power and mirror rotation. Orig. art. has: 3 figures. [JR]

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