S/136/61/000/011/007/007
E082/E135

AUTHOR: Shapiro, V.Ya.

TITLE: Experimental determination of the movement of self-aligning plugs, when drawing tubes

PERIODICAL: Tsvetnyye metally, 34 no.11, 1961, 70-77

TEXT: There are two opinions about the behaviour of self-aligning (floating) plugs during the drawing process: a) that unavoidable variations of the mechanical properties of the tube, coefficient of friction, etc. set up continually changing stresses. These alter the balance of forces which positions the plug, and cause the plug to move, within the zone of deformation. b) that a stable process is possible, only over a strictly defined length of the cylindrical part of the plug, and that in stable conditions the plug is immobile. Neither theory has been confirmed experimentally. To examine the behaviour of the plug, the author has measured, simultaneously, the axial displacement of the plug, its frequency of oscillation, and the drawing force exerted. This was done on a 3-ton drawbench, at a tube speed of 32 m/min. A special linear transducer was used to measure displacement and

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strain-gauge load cells to measure the drawing force. A two-channel oscillograph, connected in a bridge circuit, recorded the results. Nine special plugs were made, all of the form shown in Fig.3 and having the following dimensions: dia. 12 mm, length 40 mm, $\alpha = 6^\circ 20'$ to $11^\circ 45'$, D = 12.98 to 15.49 mm, ℓ_2 = 4 to 14 mm. Surface finish, class 9, 10 and 11-12. Each plug had a long stem which was located in a guide bush to prevent transverse movement. The transducer was coupled to this stem. 400 sets of recordings were made. The first series of tests was made with different values of plug cone angle, and the second series with different values of die cone angle. The following displacements of the plug were recorded: 0.18 mm when the difference between plug and die angles equalled $1^\circ 20'$; 0.23 mm when the difference equalled $3^\circ 45'$; 0.5 mm when the difference equalled $5^\circ 30'$. When the difference between cone angles was increased to $6^\circ 30'$, drawing conditions became unstable. These results confirmed the conclusions of earlier workers, that the plug cone angle must be 1° to 3° less than die cone angle. Even under these conditions, drawing is unstable if the die angle is small. This is shown in

Experimental determination of the... S/136/61/000/011/007/007
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Fig.4 where die angle 9° 40' gives stable drawing conditions. The pattern of oscillations shown in Fig.5б shows that, even with optimum working parameters, heavy drawing loads cause instability and narrow the interval of stability of drawing. Parameters must therefore be more closely maintained when loads are heavy, especially when drawing ferrous materials. The effect of surface finish, and hence of friction, is shown in Fig.6. Using plugs with class 9 finish (usual in Soviet factories), tearing of the metal occurred; this made recording difficult, and drawing was impossible (Fig.6a). Plugs with class 10 finish gave better results. With 11-12 class finish, the process was stable. These trials were repeated using different lubricants, and gave analogous results. Alternate dull and bright rings occur on some tubes drawn with floating plugs. There are, respectively, thin and thick parts of the tube wall. The variations of thickness are 0.05 to 0.12 mm. Comparison of the frequency of operation of the plug, the distance between the rings, and the speed of the tube, confirmed that rings are caused by the tube alternately wedging between die and plug, then becoming free again, during the drawing operation. The author concludes that:

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Experimental determination of the ... S/136/61/000/011/007/007
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1) When optimum parameters are used, the plug floats from one stable position to another, thus preserving the balance of forces.
2) If the parameters differ from optimum, the plug oscillates, tearing the metal, and forming rings on the drawn tube, i.e. the balance of forces is not maintained.
There are 6 figures, 3 tables and 11 Soviet-bloc references.

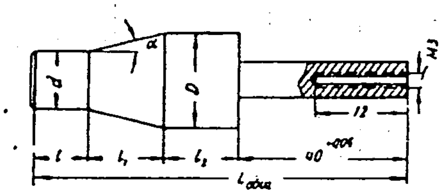

Fig.3 Sketch of plug

Card 4/7

PERLIN, I.L.; SHAPIRO, V.Ya.

Comparative analysis of power conditions in pipe drawing with floating and fixed cylindrical mandrels. Sbor. nauch. trud. GINTSVETMET no.33:299-304 '60. (MIRA 15:3)
(Drawing (Metalwork))

SHAPIRO, V. Ya.

Experimental determination of the throughput of capillary tubes made of L-96 alloy. Priborostroenie no.10:28 0 '62. (MIRA 15:10)

(Capillaries—Testing)

SHAPIRO, V. Ya.

"Basis of theory of process of drawing tube on self-aligning mandrels". Questions were considered in detail on geometric center of deformation, magnitude of various elements of self-adjusting mandrels, power conditions of the process and their analytic determination. Great interest was invoked by an explanation of the decrease of effort of drawing through use of a lubricating wedge.

Report presented at the branch seminar on drawing of tube and aluminum alloys on self-aligning mandrels, Metallurgical Factory im V. I. Lenin, Kuybyshev, 24-28 June 1963

(Tsvet. Metally, No. 10, 1963 pp 84-85, author Starostin, Yu. S.
JPRS 24,651 19 May 1964

ACCESSION NR: AT4014060 S/3072/63/000/000/0055/0061

AUTHOR: Shapiro, V. Ya.; Shkol'nikov, Ye. L.

TITLE: Analytical determination of the conditions for the appearance of liquid friction during wire drawing

SOURCE: Fiz.-khim. zakonomernosti deystviya smazok pri obrabotke metallov davleniyem. Moscow, Izd-vo AN SSSR, 1963, 55-61

TOPIC TAGS: friction, wire drawing, hydralic pressure, lubricant, viscosity, fluid mechanics, liquid friction

ABSTRACT: The predominantly liquid friction which arises in the process of wire-drawing is caused by the hydraulic action of the lubricating wedge. This friction appears between the surface of the tool and the surface of the material in the zone preceding the location of the deformation. In the present paper, an analytical expression is derived for the determination of the maximal hydraulic pressure in the lubricant.

$$P_{max} = -\frac{6\mu u}{(T_{\tau} - T_{on})\Delta}\left[1 - \frac{x_0}{l}\right]^{2}. \quad (1)$$

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ACCESSION NR: AT4014060

As shown by the formula, this pressure depends on the viscosity of the lubricant and the geometry of deformation. The hydraulic pressure increases with an increase in the viscosity of the lubricant and the rate of wire-drawing. It also increases when the wedge angle becomes smaller and when the distance between the surface of the tool and the surface of the material is reduced. Application of these calculations to the design of wire drawing apparatus will increase its stability, decrease the drawing pressure required and prevent adhesion of metal to the surfaces of the instrument. Orig. art. has: 3 figures, 1 table and 31 formulas.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 19Dec63 ENCL: 00

SUB CODE: MM NO REF SOV: 008 OTHER: 003

L 21204-65 EWT(m)/EWA(d)/EPR/EWP(t)/EWP(k)/EWP(b) Pf-4/Ps-4 IJP(c)
ACCESSION NR: AP5000945 MJW/JD/HW S/0136/64/000/012/0075/0079

AUTHOR: Shapiro, V. Ya., Patseruk, A.P.

TITLE: Drawing large-diameter thin-walled tubes from aluminum and its alloys on self-adjusting mandrels

SOURCE: Tsvetnyy metally, no. 12, 1964, 75-79

TOPIC TAGS: large diameter tube, thin-walled tube, aluminum drawing, aluminum alloy drawing, self adjusting mandrel/alloy AMG-6

ABSTRACT: Self-adjusting mandrels were designed to draw tubes 150-350 mm in diameter with a wall thickness of 2-2.5 mm from aluminum and its alloys. The angle of taper of the mandrel was 10-11°, being 1-3° less than the die angle. The mandrels were hollow, made of steel U9-U12, and had a Rockwell hardness of 57-62. To reduce friction in drawing, the surface of the mandrels was chrome plated and polished. The dies were made of the same steel and had a Rockwell hardness of 60-63. Tubes 250 mm in diam. were drawn at a speed of 7-12 m/min and tubes 250-350 mm in diam at 1.5-2.0 m/min. The wall thickness of the punched tube workpiece was 3-5.5 mm. During the drawing process the forces arising, the geometric dimensions, surface quality, and mechanical properties of the tube before and after drawing were recorded. Particular interest was

L 21204-65
ACCESSION NR: AP5000945

shown in the high-alloy, high-strength alloy AMG-6 which could not been drawn over the usual mandrel owing to adhesion but could be drawn on the self-adjusting mandrel. This new type of mandrel greatly reduced the variation in wall thickness. As a result of the study, industrial lots of tubes with diameters up to 335 mm and wall thickness of 2.2 mm have been produced. Ovalization of the trailing end of the tubes was characteristic when drawing the large-diameter, thin-walled tubes owing to uneven wall thickness. The curvature of the middle of the tube was about 1-2 mm/m. Orig. art. has: 3 tables and 3 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: IE

NO REF SOV: 007 OTHER: 000

Card 2/2

L 53967-65 EWT(m)/EWA(d)/EPR/EWP(t)/EWP(k)/EWP(b)/EWA(c) Pf-4/Ps-4 IJP(c)
JD/WW/HW

ACCESSION NR: AP5013603 UR/0136/65/000/005/0076/0078
669.71-462:539.5

34
B

AUTHOR: Tityunik, G.N.; Shapiro, V. Ya.

TITLE: Mechanical properties of aluminum-alloy tubes as a function of the degree of deformation during drawing

SOURCE: Tsvetnyye metally, no. 5, 1965, 76-78

TOPIC TAGS: drawing stress, deformation resistance, aluminum alloy tube, tube drawing mandrel, yield point

ABSTRACT: In analytic determinations of the drawing stress deformation resistance is the most important quantity. For the drawing of aluminum-alloy tubes the yield point $\sigma_{0.2}$ can be taken as the deformation resistance. Since, however, the available information pertains only to mandrel-less drawing of tubes, the authors performed their own investigation of the mechanical properties of these tubes during their drawing, particularly with respect to the newly developed method of drawing in a self-adjusting mandrel which assures extremely high degrees of drawing. Longitudinally notched

Card 1/2 Submitted: 000

L 53967-65
ACCESSION NR: AP5013603

specimens of these tubes (diameter 110x105mm) were tested in a laboratory tensile testing machine with tensile stresses of 1-5 tons. The test results were used as the basis for plotting curves of mechanical properties of the tubes as a function of the integral deformation index $\ln\mu$. Beginning with $\ln\mu = 0.6$ the yield point was found to differ by 7 tons/m^2 (0.7 kg/mm^2) from the ultimate strength; as the degree of drawing was further increased, this quantity became practically constant and amounted to 4%, which demonstrates the validity of using in analytic calculations the quantity σ_d in place of $\sigma_{0.2}$ when information on the latter is absent. The investigated relations are analogous to those specified in the literature for sheets and wire. The somewhat greater scatter of the obtained values may be explained by the inevitable lack of uniformity in tube-wall thickness, which, by contrast with sheets and wire, makes it impossible to determine the true deformation. The authors' findings can be utilized in scheduling the drawing process as well as in the analytic calculation of the drawing stresses. Orig. art. has: 4 figures, 1 table.

ASSOCIATION: none

Card 2/2

L 23314-66 EWT(m)/T/EWP(t)/EWP(k) IJP(c) JD/HW/DJ

ACC NR: AP6006340 SOURCE CODE: UR/0413/66/000/002/0063/0063

AUTHOR: Kuz'menkov, V. A.; Nikolayeva, M. R.; Shapiro, V. Ya.; Patseruk, A. P.

ORG: none

TITLE: Lubricant for cold working of metals. Class 23, No. 178006

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1966, 63

TOPIC TAGS: metalworking, cold working, lubricant

ABSTRACT: This Author Certificate describes a lubricant for cold working of metals. To reduce the coke residue formed on the surface of the metal worked and reduce the annealing temperature, polyisobutylene with a molecular weight of 20,000 to 100,000 is added to the composition. [LD]

SUB CODE: 13/ SUBM DATE: 11Feb65/ ORIG REF: none/ OTH REF: none/

Card 1/1

UDC: 621.892.6:621.7.016.3

SALYUT... V., KVATER, [illegible], SHA[illegible], V.Ye.

[illegible] of hydrogen on the mechanical properties of steel. Stal' [illegible] 909-915 O '56. (MLRA 10:9)

[illegible] ...ssnzavod.

(Steel--Hydrogen content)

NEKRASOV, V.G.; OLISOV, A.A.; SHAPIRO, V.Z.

Introducing blast pipes with heat-resistant lining. Biul.tekh.-ekon. inform.Gos.nauch.-issl.inst.nauch.i tekh.inform. 18 no.11:6 N '65. (MIRA 18:12)

SAGAYDAK, I.I.; NEKRASOV, V.G.; KOPYRIN, I.A.; BORTS, Yu.M.; BRATCHENKO, V.P.;
RYSYUKOV, N.Ye.; KAKUSHA, N.P.; SHAPIRO, V.Z.

Operation of a large capacity blast furnace with natural gas.
Metallurg 10 no.7:16-19 Jl '65. (MIRA 18:7)

1. Orsko-Khalilovskiy metallurgicheskiy kombinat i Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii.

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001548320019-8"

SHAPIRO, Ya.; TEMIROV, T.

Motions in Riemann spaces with a reducible isotropy group.
Sib. mat. zhur. 6 no.6:1407-1414 N-D '65. (MIRA 18:12)

MAKRUSHIN, A.; SHAPIRO, Ya.

New methods for using bulldozers in loading. Avt. dor. 21 no.2:24 F '58. (MIRA 11:2)

(Bulldozers) (Loading and unloading)

SHAPIRO, Ya.; TEMIROV, T.

Piemann spaces with a reducible isotropy group. Dokl. AN SSSR 157 no.3:539-541 Jl '64. (MIRA 17:7)

1. Gor'kovskiy gosudarstvennyy universitet imeni Lobachevskogo. Predstavleno akademikom A.N. Kolmogorovym.

SOV/88-58-97-7/7

AUTHOR: Shapiro, Ya. G., Candidate of Technical Sciences

TITLE: Experimental Study of a Liquid Ejector (Eksperimental'noye issledovaniye zhidkostnogo ezhektora)

PERIODICAL: Trudy Moskovskogo aviatsionnogo Instituta, 1958, Nr 97; Addition of a Supplementary Volume in Jet Apparatus (Prisoyedineniye dopolnitel'noy massy v struynykh apparatakh), pp 191-236 (USSR)

ABSTRACT: The author states that phenomena which occur in the liquid ejector chamber, such as energy losses and the distribution of these losses, are not yet sufficiently known. Theoretical determination of the optimum parameters of these processes is rather inexact. The mixing process of the two flows in a water ejector was investigated by measuring the fields of velocities, pressures and pulsations of the full pressure heads and by characteristics of work of the ejector. The analysis of the obtained experimental data made possible a more precise design of the water ejector, providing the basis for selecting the mixing chamber length, for establishing ejector characteristics, and for conducting power analysis of various sectors of the mixing chamber. As a result of this analysis of the available experimental material the following conclusions, applicable to slow

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velocity ejectors, were made by the author: 1. The mixing of jets in an ejector represents a complex process associated with the transformation of velocity and pressure profiles with a turbulent exchange of impulse among particles. The presence of steep velocity gradients leads to considerable pulsations of velocities at every point of the mixing zone, which result in internal energy losses and in friction losses along the walls. Direct measurements of such velocity fields with a pitot tube are impossible without considerable errors. Measurements are distorted in proportion to the pulsation component of the velocity. 2. Actual losses due to friction with the walls of the ejector's mixing chamber are 2-3 times larger than losses ordinarily allowed for in computation. In the proposed empirical formula they are determined by the so-called "friction velocity," and not by the average velocity of the mixture. 3. At the beginning of the mixing there is a pressure drop, which depends on the characteristics of the ejector. An empirical formula is given for determining the velocity drop, which attains 7 percent of the velocity head of the working medium. 4. The field of velocities is equalized at a distance of 3-4 times the diameter of the mixing chamber. Equalization is practically completed at 7 times the diameter of the chamber. The length of the mixing chamber of an ejector working with a diffusor should be limited to 7 times the diameter. 5. The performance of the ejector depends mainly on the ratio of speeds of the primary and secondary flow (W_1, W_2). The efficiency of the ejector decreases sharply, when the velocity coefficient deviates from its optimum value. The bibliography consists of 10 references, 6 of them Soviet, 2 German, and 2 English.

AKHVERDOV, I., doktor tekhn. nauk; SHAPIRO, Ya., kand. tekhn. nauk; RUDITSER, R., inzh.

Manufacturing three-dimensional prefabricated room units by a method of concreting on a horizontal stand. Zhil. stroi. no.1: 7-10 '64. (MIRA 18:11)

1. Chlen-korrespondent AN BSSR (for Akhverdov).

SHAPIRO, Ya. I.

Sapiro, Ya. L. Geodesic fields of directions and projective systems of paths. Mat. Sb. N.S. 36(78), 125–148 (1955). (Russian) I-F/W

Let us consider a holonomic field of m-dimensional directions formed by m vectors $\overset{a}{V}{}^{\alpha}$ ($\alpha, \beta=1, \cdots, n+m$; $a, b=n+1, \cdots, n+m$) in an affinely connected space of $n+m$ dimensions A_{n+m}; then the field defines a family of m-dimensional subspaces V_a in A_{n+m}. A holonomic field of m-dimensional directions is called "geodesic", if the totality of the subspaces V_a passing through every point of any geodesic line which is not contained in any V_a is a totally geodesic subspace of $m+1$ dimensions in A_{n+m}. A necessary condition that the field of m-dimensional directions formed by $\overset{a}{V}{}^{\alpha}$ be geodesic is given by expressions in terms of the vectors $\overset{a}{V}{}^{\alpha}$, and it is shown that if such a geodesic field exists in A_{n+m}, the coefficients of connection of A_{n+m} can be reduced to $\Gamma^i_{\alpha\beta}=\Pi^i_{\alpha\beta}(x^b)+\psi_{(\alpha}\delta^i_{\beta)}$, $\Pi^i_{a\beta}=0$ ($i=1, \cdots, n$), and conversely. All such A_{n+m} form a class contained in the general one. A special one of this class is V. F. Kagan's subprojective space of n dimensions [Trudy Sem. Vektor. Tenzor. Anal. 1, 12–101 (1933)], which contains a linear line system of an $(n-1)$-dimensional euclidean space. If a system of paths in

3000

(over)

Saporo, Ya. L.

an n-dimensional manifold can be supplemented by others so that it defines with the given system a complete system of geodesic lines in an affinely connected $(n+m)$-dimensional space, then the system of paths is said to be "imbedded" (projectively). Making use of the concept "imbedding", it is also proved that the above stated necessary condition is sufficient. Then the obtained results are applied to a Riemannian space containing a geodesic field of directions. At the end, there are some appendices where it is shown that the results can be applied readily to metric and generalized subprojective spaces, the generalized projective geometry of H. Weyl [Raum, Zeit, Materie, 4. Aufl., Springer, Berlin, 1921], and the relativistic theory of a central-symmetric gravitational field.

A. Kawaguchi (Sapporo).

2/2

CA

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

An apparatus for the preparation of hydrogen sulfide. Ya. L. Shapiro. *Lab. Prakt.* (U. S. S. R.) 1939, No. 2-3, 35.—The app. consists of simple lab. glassware. Two connected columns contain the acid and the FeS. $Na_2S_2O_3$ soln. is provided to absorb any escaping H_2S.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

21

The detection of copper and lead in gas liquor. Ya. L. Shapiro. *Lab. Prakt.* (U. S. S. R.) 15, No. 4, 22-3 (1940).—Acidify 500 ml. of gas liquor with 2-3 ml. of 10% HNO_3 and evap. to 60-70 ml. To 20-15 ml. of the soln. in a wide test tube add 0.2-0.3 ml. of strong HNO_3, heat to 70-80°, immerse the electrodes from 2 dry cells and bring the soln. to simmering. Remove the electrodes after 20-5 min. and immerse them in distd. water. If Pb is present, the anode acquires a gold or a dark-brown color. The cathode has the color of Cu or is slightly darker, depending on the amt. of Cu present. For confirmation dissolve PbO_2 on the anode in several drops of 1% *o*-tolidine-HCl, which produces a yellow color. *o*-Tolidine can be replaced with 3-5% soln. of KI acidified with AcOH. Dissolve the Cu on the cathode in several drops of a strong HNO_3 soln. and add NH_4OH drop by drop. A light-blue color is obtained. Seven references. W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SHAPIRO, Ya. L.

O proizvol'nykh komponentakh tenzora vtorogo ranga. Matem, sb., 17 (59),(1945), 65-84.

SO: Mathematics in the USSR, 1917-1947
edited by Kurosh, A.G.,
Markushevich, A.I.,
Rashevskiy, P.K.
Moscow-Leningrad, 1948

SHAPIRO, YA. L. Dr. Physico-Mathematical Sci.

"Spaces That Include the Projective Systems of Curves." Sub 18 Jun 47, Moscow Order of Lenin State U imeni M. V. Lomonosov

Dissertations presented for degrees in science and engineering in Moscow in 1947

SO: Sum No. 457, 18 Apr 55

Mathematical Reviews
Vol. 14 No. 8
Sept. 1953
Geometry

Sapiro, Ya. L. Spaces containing projective systems of curves. Trudy Sem. Vektor. Tenzor. Analizu 6, 494–505 (1948). (Russian)

The essential problem treated in the present paper is imbedding of a given system of curves in an n-dimensional manifold X_n into an affinely connected space A_{n+m} of dimensions $n+m$. In the first part of the paper we find at first the relations between the concept of "geodesic field of directions" introduced by the present author [C. R. (Doklady) Acad. Sci. URSS (N.S.) 32, 237–239 (1941); these Rev. 3, 191] and projective differential geometry. A field of directions defined by v^α ($\alpha=0, 1, \cdots, n$) is called geodesic when the family of its trajectories (v-lines) passing through all points of any geodesic of A_{n+1} composes entirely a geodesic surface. The relations $v^\alpha{}_{,\beta}=T\delta_\beta^\alpha+B_\beta v^\alpha$ and $v^\gamma R^\alpha{}_{(\gamma\beta)\lambda}=Q_{(\gamma}\delta_{\beta)}^\alpha+S_{\gamma\beta}v^\alpha$ are necessary and sufficient for the geodesic field of directions v^α, where $v^\alpha{}_{,\beta}$ is the covariant derivative of v^α and T, B, Q, S are certain quantities in A_{n+1} with the curvature tensor $R^\alpha{}_{\gamma\beta\lambda}$. When A_{n+1} admits a geodesic field of directions v^α, we can choose such a coordinate system that its x^0-lines coincide with v-lines and the system of geodesics in A_{n+1} is induced to the system of projective geodesics in the subspace X_n defined by $x^0=$ const.

(OVER)

If the equations of a given system of paths in X_n are contained in the equations of geodesics in A_{n+1}, the system is said to be imbedded in A_{n+1}, which admits necessarily a geodesic field of directions. These facts lead us to the result: A given system of paths in X_n can be imbedded in A_{n+1}, when and only when the system is a projective system of geodesics. We find also the relations of imbedding A_{n+1} to the projective coordinate system of van Dantzig and E. Cartan. The theory may be generalized to A_{n+m}. In the second part it is shown that there are three types of systems of curves defined by $d^2x^i/dt^2 = f^i(x, dx/dt)$ which can be imbedded in A_{n+1}, where $i = 1, 2, \cdots, n$. Without calculation, coefficients of connection of the imbedding A_{n+1} are stated for each of the three types. Finally, there are some statements concerning an A_{n+1} which admits at the same time a one-parameter group of affine collineations and a projective system of trajectories. *A. Kawaguchi.*

7-13-54
LL

AUTHOR: Shapiro, Ya.L. (Gor'kiy)

SOV/39-45-4-7/7

TITLE: On Linear Manifolds of Geodesic Directional Fields in the Space of Affine Connection (O lineynykh mnogoobraziyakh geodezicheskikh poley napravleniy v prostranstve affinnoy svyaznosti)

PERIODICAL: Matematicheskiy sbornik, 1958, Vol 45, Nr 4, pp 511-528 (USSR)

ABSTRACT: The present paper contains a continuation of the investigations carried out by the author in an earlier paper [Ref 4]. The principal result consists in the assertion that systems of paths which are imbedded into an A_{n+1}, are isomorphic to the set of curves which is obtained by projecting the geodesics of the A_{n+1} onto a hypersurface.
There are 5 references, 3 of which are Soviet, 1 Japanese, and 1 Dutch.

SUBMITTED: March 20, 1957

Card 1/1

1. Topology 2. Geodesics - Applications

AUTHOR: Shapiro, Ya. (Gor'kiy) SOV/ 20-120-3-11/67

TITLE: Geodesic Direction Fields and Homothety Groups in Spaces of Affinitive Connection (Geodezicheskiye polya napravleniy i gruppy gomotetiy v prostranstvakh affinnoy svyaznosti)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 3, pp481-484 (USSR)

ABSTRACT: Let A_n be an n-dimensional space of affine connection. In A_{n+1} $(n \geqslant 2)$ with coordinates x^β let a direction field be defined by the vector field $A^\alpha(x^\beta)$, $\alpha, \beta = 0, 1, \dots, n$. The trajectories ("A-lines") of A^α, which intersect a geodesic curve of A_{n+1} are assumed to generate a two-dimensional surface S. If S is completely geodesic for every geodesic curve, then the field defined by A^α is called a geodesic direction field. Let A_{m+n} contain m geodesic direction fields which are assumed to be defined by the vectors $\overset{a}{A}{}^\alpha$. There exist coordinate systems (class Σ') for which the trajectories of the vector fields $\overset{a}{A}$ are the u^a - coordinate lines. In these coordinates it holds

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SOV

Geodesic Direction Fields and Homothety Groups in Spaces of /20-120-3-11/60
Affinitive Connection

$$\Gamma^{\sigma}_{\alpha\beta} = \Pi^{\sigma}_{\alpha\beta}(u^i) + \psi(\alpha\delta^{\sigma}_{\beta})$$

(1) $$\Gamma^{b}_{a\beta} = \Pi^{b}_{\alpha\beta}(u^b, u^i) \quad , \quad \Gamma^{i}_{\alpha\beta} = \Pi^{i}_{\alpha\beta}(u^k)$$

$$\Gamma^{p_a}_{a\beta} = 0 \quad , \quad \Gamma^{p_a}_{\alpha\beta} = 0 \, ,$$

for the coefficients of the affine connection of A_{m+n} (possessing m geodesic direction fields), where the index P_a runs through all values 1,..., m + n except a. Conversely it follows from (1) that u^a - coordinate lines are the trajectories of the geodesic direction fields.

By normalization of the $\overset{a}{A}{}^{\alpha}$ - multiplication with certain non-constant factors - it is said to be possible to achieve that for all constant values λ_a the vector $\lambda_a \overset{a}{A}{}^{\alpha}$, ...

Card 2/4

defines a geodesic direction field, where no linear relation with the constant coefficients exists between the $\overset{a}{A}{}^{\alpha}$. The set
The set of the geodesic direction fields defined by the vectors $\sum_a \lambda_a \overset{a}{A}{}^{\alpha}$ is called the linear manifold of the (m-1)-dimensional geodesic direction fields. Vector fields $\overset{a}{A}{}^{\alpha}$
normalized in the described way are denoted as L - normalized.
The author gives necessary and sufficient conditions that the $\overset{a}{A}{}^{\alpha}$ are L - normalized and that the geodesic direction fields defined by the $\overset{a}{A}{}^{\alpha}$ belong to a linear manifold in the sense mentioned above. Let $\overset{a}{A}{}^{\alpha} \frac{\partial f}{\partial x^{\alpha}}$ be the operators of the group (of order m) of the automorphic transformations of A_{n+m}. If the direction field defined by the vector $\sum_a \lambda_a \overset{a}{A}{}^{\alpha}$ of an ar-

Geodesic Direction Fields and Homothety Groups in Spaces of Affinitive Connection

SOV/20-120-3-11/67

bitrary one-parameter subgroup is geodesic, then the transformations of the group are denoted as homotheties of the space A_{m+n}. The homothety group of order m of the space A_n is locally isomorphic to the homothety group of the (m-1)-dimensional affinitive space. Some further results are given, and 9 theorems.

There are 4 references, 2 of which are Soviet, 1 Dutch, and 1 Japanese.

ASSOCIATION: Gor'kovskiy gosudarstvennyy universitet imeni N.I.Lobachevskogo (Gor'kiy State University imeni N.I. Lobachevskiy)

PRESENTED: December 15, 1957, by P.S.Aleksandrov, Academician

SUBMITTED: March 2[illegible], 19[illegible]

1. Geodesics Analysis 2. Operators (Mathematics) 3. Transformations (Mathematics)

Card 4/4

KHATIPOV, Akhmed Emir-Asan; SHAPIRO, Ya.L., red.

[Course in analytic geometry] Kurs analiticheskoi geometrii. Pod red. IA.L.Shapiro. Samarkand, Izd-vo Uzbekskogo gos.univ. Pt.1. 1959. 191 p. (MIRA 13:5)
(Geometry, Analytic)

SHAPIRO, Ya.L.

A class of Riemann spaces. Trudy Sem.po vekt.i tenz.anal. no.12:203-212 '63. (MIRA 16:6)

(Spaces, Generalized)

SHAPIRO, Ya.L. (Gor'kiy)

Some systems of paths included in Riemannian space. Izv. vys. ucheb. zav.; mat. no.3:166-172 '63. (MIRA 16:4)

(Spaces, Generalized)

SHAPIRO, Ya. M.

VENTSEL', D. A., and YA. M. SHAPIRO.

Vneshniaia ballistika. Utverzhdeno v kachestve uchebnika dlia akademii RKKA i vtuzov obor. promyshl. Moskva, Oborongiz, 1939. 2 v., illus., diagrs., tables.

Includes bibliographies.

Title tr.: External ballistics. Approved as a textbook for academies of the Red Army and higher technical schools of the defense industry.

UF825.V4

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

SHAPIRO, Ya.M., professor, doktor tekhnicheskikh nauk; BOSHENYATOV, S.G., redaktor; ZUDAKIN, I.M., tekhnicheskiy redaktor.

[Exterior ballistics] Vneshniaia balistika. Moskva, Gos. izd-vo oboronnoi promyshlennosti, 1946. 407 p. (MLRA 8:2)

(Ballistics)

BELEN'KIY, Il'ya Markovich; SHAPIRO, YAkov Moiseyevich; YAKOVLEV, Boris Mikhaylovich; MOZZHUKHIN, N.A., red.; VYSOTSKAYA, R.S., red.; GOLUBKOVA, L.A., tekhn.red.

[Accounting in grain-receiving stations] Bukhgalterskii uchet na khlebopriemnykh punktakh. Pod red. N.A. Mozzhukhina. Moskva, Izd-vo tekhn. i ekon. lit-ry po voprosam mukomol'no-krupianoi, kombikormovoi promyshl. i elevatorno-skladskogo khoz., 1957. 390 p. (MIRA 11:8)

(Grain trade--Accounting)

L'VOVA, E.; PORTMAN, E.; SEMENOV, F.; TERKHANOV, A.; TSEYTLIN, M.; SHAPIRO, Ya. M.

Pamphlet on the development of grain industry in the forthcoming seven-year plan ("Seven-year plan for the development of grain industry" by A.V.Borodin. Reviewed by E.L'vova and others). Muk.-elev.prom. 25 no.9:32 S '59. (MIRA 12:12)

1. Leningradskoye oblastnoye upravleniye khleboproduktov.
(Grain elevators) (Grain milling) (Borodin, A.V.)

SHAPIRO, Ya.S., kandidat meditsinskikh nauk

Late results of surgical treatment of ovarian tumors. Akush. i gig. 33 no.2:52-56 Mr-Ap '56. (MLRA 9:7)

1. Iz kafedry akusherstva i ginekologii (zav.-prof. I.I.Yakovlev) I. Leningradskogo meditsinskogo insituta imeni akademika I.P.Pavlova
(OVARIES, neoplasms
surg., remote results)

SHAPIRO, Ya.Sh.

Tectonics of the Volga Valley portion of Saratov and Volgograd Provinces. Izv.AN SSSR.Ser.geol. 27 no.4:76-84 Ap '62. (MIRA 15:4)

1. Volgogradskiy nauchno-issledovatel'skiy institut neftyanoy i gazovoy promyshlennosti.

(Volga Valley—Geology, Structural)

OYRAKH, O., inzh.; TERENT'YEV, N., inzh.; SHAPIRO, Ya., inzh.

Vibrator for making reinforced concrete underlying slabs.
Na stroi.Mosk. 2 no.6:24 Je '59. (MIRA 12:8)
(Vibrators) (Concrete slabs)

SHAPIRO, Ya.V., inzh.

Modernization of concreting combines. Mekh.stroi. 17 no.4: 19-21 Ap '60. (MIRA 13:6)
(Concrete slabs)

AKHVERDOV, I.N., prof., doktor tekhn.nauk; SHAPIRO, Ya.V., inzh.

Technical and structural characteristics of concreting machines with a sliding vibratory press. Bet.i zhel.-bet. 8 no.4:181-184 Ap '62. (MIRA 15:5)

1. Chlen-korrespondent AN BSSR (for Akhverdov).
(Vibrators)

PA 28/49T73

SHAPIRO, YA. YE.

USSR/Medicine - Roentgen Rays, Diagnosis   Oct 48
Medicine - Hemoptysis

"Hemoptysis and Pulmonary Hemorrhage," Ya. Ye. Shapiro, Dr Med Sci, 5 pp

"Fel'dsher i Akusherka" No 10

Discusses characteristics of hemoptysis and pulmonary hemorrhage. Suggests morphine injections as therapeutic remedy, roentgenological observations for accurate diagnosis of diseases, and appropriate treatment.

[redacted]

28/49T73

[illegible]

PA 34/49T9

USSR/Medicine - Pneumonia, Diagnosis Nov 48
Medicine - Pneumonia, Therapy

"Croupous Pneumonia and Its Treatment,"
Ya. E. Shapiro, Dr Med Sci, 5 pp

"Fel'dsher i Akusherka" No 11

Discusses diagnosis, prognosis, and treatment.

[redacted] 34/49T9

salbman, m. i. I SHAPIRO, YA. E.

25256 SALBMAN, M. I. I SHAPIRO, YA. E. O Kombinatsii Leykozovi Ostrogo Miliarnogo Tuberkuleza I O Leykemoidnoy Reaktsii Pri Tuberkuleznoy Infektsii. Terapevt, Arkhiv, 1949, Vyp. 4. S. 45-53-Bibliogr: S. 53

SO: Letopis' No. 33, 1949

SHAPIRO, YA.E.

22672. SHAPIRO, YA.E. K istorii bor'by ostroumova i ego shkoly protiv reaktsionno-idealisticheskogo ucheniya veysmana. Sov. meditsina, 1949, No. 7, S. 33-36

SO: LETOPIS' No. 20, 1949

SHAPIRO, YA. YE.

25987. Shapiro, Ya. Ye. Obmorok. Fel'dsher i akusherka, 1949, No 7, s. 46-48

SO: Knizhnaya Letopis', Vol. 1, 1955

[illegible], [illegible]. Ye.

34168. Roman Al'bertovich Luriya. (Terapevt. 1874-1941). Sov. meditsina, 1949, No 11, s. 34-35

SO: Knizhnaya Letopis' No 6, 1955

SHAPIRO, Ya.Ye.

Therapy and prevention of angina pectoris & myocardial infarction. Feldsher & akush., Moskva no. 11:29-34 Nov. 1951.(CLML 21:3)

1. Author has title of Professor.

USSR.

The influence of riboflavine on the pulse, blood pressure, and diuresis in Basedow's disease. Ya. E. Shapiro (1st Med. Inst., Moscow). *Klin. Med.* (U.S.S.R.) 29, No. 4, 43-9(1951); *Chem. Zentr.* 1951, II, 3192; cf. *C.A.* 48, 8388a.—Intravenous administration of riboflavine (I) (10 mg. in 10 cc. physiol. NaCl soln.) to patients suffering from Basedow's disease produced a slowing of the pulse, a reduction in the max. and min. arterial blood pressure, and an increased diuresis. The decrease in pulse and blood pressure appeared in 5-15 min. after administration of I and persisted for 1.5-2 hrs. The reduction in pulse rate appeared the sooner and was more pronounced the higher the initial value had been. An increase in pulse rate was observed in cases of bradycardia and extrasystole. No essential change occurred after treatment with methylthiouracil. The reduction in blood pressure showed no relation to the initial values. The drops in pulse rate and blood pressure indicated that the vitamin B_2 injections affected the parasympathetic nervous system. E.g., these effects were not observed in dogs which had received subcutaneous injections of atropine. Even in healthy individuals, the daily diuresis exceeded the amt. of liquid taken by 15-20%. The diuretic effect of whey is attributed to its I content. In general, injections of I in Basedow's disease produce subjective improvement; in cases of hypothyreosis they cause deterioration of the general condition.

M. G. Moore

[illegible], Prof.

Stomach - Cancer

Cancer of the stomach; diagnosis and therapy. Fel'd.i akush. no. 8, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. Unclassified.

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001548320019-8"

SHAPIRO, Ya.Ye.

Lobar pneumonia. Fel'dsher & akush. no. 12:11-17 Dec 1952. (CLML 23:3)

1. Professor.

SHAPIRO, YA.E.

(2)

Excretion of riboflavine following its intravenous injection in Basedow's disease. Ya. E. Shapiro (Hosp. Therap. Clinic, 1st Med. Inst., Moscow). Terap. Arkh. 25, 48-54 (1953).—In Basedow's disease there is hardly any excretion of riboflavine (I). Patients suffering from Basedow's disease were given daily intravenous injections of 10 mg. I for 3 days preceding and following treatment with methylthiouracil. Their daily diet included 1.8-2 mg. of I. Out of 17 cases 8 eliminated during the first 3 days over 75%, 7 over 90%, 2 about 50%; $^1/_3$ of the patients continued eliminating I for 48 hrs. following the last injection (1.5-4 mg./24 hrs.). After this period I completely disappeared from the urine. Ten out of the 17 cases were then treated with methylthiouracil and when the clinical symptoms indicated improvement, they were given daily injections of 10 mg. of I for 3 days. Five eliminated up to 50%, 3 up to 66%, and only one 81.6%. Healthy cases (II), chronic septic endocarditis (III), hypothyroid (IV) and assorted pathologic cases (V) served as controls. II eliminated 69-27, III 16-82, IV 67.7-55.3, and IV 50-70%. Similar results are obtained when excess protein is added to the daily ration of Basedow's disease patients. Increased excretion following daily injections does not exclude deficiency. A. Mirkin

SHAPIRO, Ya.Ye.; ALFEYEV, N.M.(Ryazan')

Effect of combined medicinal sleep and vasodilator therapy of hypertension. Klin. med. 33 no.9:31-34 S '55. (MLRA 9:2)

1. Iz fakul'tetskoy terapevticheskoy kliniki (zav.-prof. Ya.Ya. Shapiro) Ryazanskogo meditsinskogo instituta imeni akad. I.P. Pavlova (dir.-dotsent Ye.N. Kovalev)

(HYPERTENSION, therapy
sleep ther. with vasodilators)
(VASOMOTOR DRUGS, therapeutic use,
hypertension, with sleep ther)
(SLEEP, therapeutic use,
hypertension, with vasodilators)

SHAPIRO, Ya.Ye., prof. (Ryazan'); IVANOVA, Ye.N., kand.med.nauk (Moskva)

Penicillin and its therapeutic use. Fel'd. i akush. 22 no.10:41-45 O '57. (MIRA 11:1)

(PENICILLIN)

SHAPIRO, Ya.E., prof. (Ryazan')

Acute and chronic cholecystitis. Fel'd. i akush. 22 no.11:15-20 N '57. (MIRA 11:2)

(GALL BLADDER--DISEASES)

SHAPIRO, Ya.Ye., prof., IVANOVA, Ye.N., kand.med.nauk (Moskva)

Streptomycin and its use. Fel'd. i akush. 23 no.10:8-13 O'58 (MIRA 11:11)

(STREPTOMYCIN)

SHAPIRO, Ya.Ye.

Stenocardia (angina pectoris). Fel'd. i akush. 23 no.11:3-8 N '58
(MIRA 11:11)

(ANGINA PECTORIS)

SHAPIRO, Ya.Ye., prof.

On heartburn. Zdorov'e 5 no.7:30 Jl '59. (MIRA 12:11)
(ESOPHAGUS--DISEASES)

SHAPIRO, Ya.Ye., prof.; IVANOVA, Ye.N., kand.med.nauk (Moskva)

Use of broad spectrum antibiotics having antimicrobial effect. Med.sestra 18 no.8:8-13 Ag '59. (MIRA 12:10)
(ANTIBIOTICS)

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SHAPIRO, Ya.Ye., prof. (Moskva)

Acute diffuse nephritis. Fel'd i akush. 24 no.4:26-30
Ap '59. (MIRA 12:5)
(KIDNEYS--DISEASES)

SHAPIRO, Ya.Ye., prof. (Moskva)

First All-Russian Congress of Therapeutists. Fel'd i akush. 24 no.8:44-46 Ag '59. (MIRA 12:12)
(THERAPEUTICS--CONGRESSES)

SHAPIRO, Ya.Ye. (Moskva)

Epidemiology and prophylaxis of influenza. Fel'd. i akush. 24 no.10: 33-37 O '59. (MIRA 13:2)
(INFLUENZA)

SHAPIRO, Ya.Ye., prof.

Mouth odor. Zdorov'e 6 no. 11:30 N '60. (MIRA 13:10)
(MOUTH - SEPSIS)

SHAPIRO, Ya.Ye., prof. (Moskva)

Myocardial infarct; nature, causes, preventive measures, principles of treatment and care. Med. sestra 19 no. 10:7-16 O '60.
(MIRA 13:10)

(HEART—INFARCTION)

SHAPIRO, Ya.Ye.; MILOSLAVSKIY, Ya.M.; CHERNYSHEVA, M.I.; MASLENNIKOVA, A.I.; TYUNINA, Ye.A.

Treatment of patients with relapsing rheumocarditis by means of inductothermy (shortwave diathermy) in the adrenal region in combination with salicylates. Vop. kur., fizioter. i lech. fiz. kul't. 25 no. 6:508-513 N-D '60. (MIRA 14:2)

1. Iz fakul'tetskoy terapevticheskoy kliniki (zav. - prof. Ya.Ye. Shapiro) Ryazanskogo meditsinskogo instituta imeni akademika I.P. Pavlova.

(RHEUMATIC HEART DISEASE) (DIATHERMY)
(SALICYLATES—THERAPEUTIC USE)

SHAPIRO, Ya.Ye., prof. (Moskva)

Care and treatment of influenza patients at home. Fel'd. i akush. 25 no.11:56-59 N '60. (MIRA 13:11)
(INFLUENZA)

ZAKHIDOV, Abdula Zakhidovich; SHRAYBER, Leonid Borisovich; SHAPIRO, Ya.Ye., red.; POGOSKINA, V.M., tekhn. red.

[Influenza is contagious] Gripp zarazen. Moskva, Medgiz. 1961. 18 p. (MIRA 15:3)

(INFLUENZA)

SHAPIRO, Ya.Ye., prof. (Moskva)

Diet and movement regimen for patients following myocardial infarct. Fel'd. i akush. 26 no. 1:11-15 Ja '61. (MIRA 14:2)
(DIET IN DISEASE) (EXERCISE THERAPY) (HEART—INFARCTION)

SHAPIRO, Ya.Ye., prof. (Moskva)

Treatment of chronic iron deficiency anemias of varying etiology. Fel'd. i akush. 26 no. 2:11-16 F '61. (MIRA 14:4)
(ANEMIA) (IRON IN THE BODY) (DEFICIENCY DISEASES)

SHAPIRO, Ya.Ye., prof. (Moskva)

Bronze disease. Fel'd. i akush. 26 no.4:61 Ap '61. (MIRA 14:3)
(ADDISON'S DISEASE)

SHAPIRO, Ya.Ye., prof. (Moskva)

Treatment of pernicious anemias and anemias similar to them.
Fel'd. i akush. 26 no.6:22-26 Je '61. (MIRA 14:7)
(ANEMIA)

SHAPIRO, Ya.Ye., prof. (Moskva)

Senile pruritis. Fel'd. i akush. 26 no.7:54-56 Jl '61. (MIRA 14:7)
(PRURITIS)

SHAPIRO, Ya.Ye., prof. (Moskva)

Dry extract of Rubia tinctorum in nephrolithiasis. Fel'd i akush. 26 no.12:52 D '61. (MIRA 14:12)
(CALCULI, URINARY) (MADDER--THERAPEUTIC USE)

ALEKSEYEV, G.A., prof.; BAGDASAROV, A.A., prof.[deceased]; BEYYER, V.A., prof.; VOGRALIK, V.G., prof.; DEMIDOVA, A.V., kand. med. nauk; DUL'TSIN, M.S., prof.; ZAKRZHEVSKIY, Ye.B., prof.; KONCHALOVSKAYA, N.M., prof.; KASSIRSKIY, I.A., prof.; KOST, Ye.A., prof.; LOGINOV, A.S., kand. med. nauk; NESTEROV, V.S., prof.; SHERSHEVSKIY, G.M., prof.; YANOVSKIY, D.N., prof.; MYASNIKOV, A.L., prof., otv. red.; TAREYEV, Ye.M., prof., am. otv. red.; SHAPIRO, Ya.Ye., red.; LYUDKOVSKAYA, N.I., tekhn. red.

[Multivolume manual on internal diseases]Mnogotomnoe rukovodstvo po vnutrennim bolezniam. Otv.red. A.L.Miasnikov. Moskva, Medgiz. Vol.6. [Diseases of the blood system and hemopoietic organs]Bolezni sistemy krovi i krovotvornykh organov. 1962. 700 p. (MIRA 15:12)

1. Deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR (for Bagdasarov, Myasnikov, Tareyev). 2. Chlen-korrespondent Akademii meditsinskikh nauk SSSR (for Kassirskiy).
(BLOOD—DISEASES)
(HEMOPOIETIC SYSTEM—DISEASES)

SHAFIRO, Ya.Ye., prof.; ZINOV'YEV, I.A., kand.med.nauk; SHATALOV, N.N., kand.med.nauk; SIDEL'NIKOVA, T.Ya., kand.med.nauk; ROZENTUL, L.M., vrach-kosmetolog; SADCHIKOVA, M.N., kand.med.nauk

Health hints. Zdorov'e 8 no.8:30-31 Ag '62. (MIRA 15:8)
(HYGIENE)

SHAPIRO, Yakov Yefimovich, doktor med. nauk; STAROSTENKOVA, M.M., red.; ATROSHCHENKO, L.Ye., tekhn. red.

[You shouldn't treat your heart lightly; the prevention of myocordial infarction and its complications]S serdtsem ne shutiat; profilaktika infarkta miokarda i ego oslozhnenii. Moskva, Izd-vo "Znanie," 1962. 44 p. (Novoe v zhizni, nauke, tekhnike. VIII Seriia: Biologiia i meditsina, no.23) (MIRA 15:12)

(HEART--INFARCTION)

SHAPIRO, Ya.Ye., prof.; NEYMAN, M.I., red.; KOKIN, N.M., tekhn. red.

[Obesity] Ozhirenie; preduprezhdenie i lechenie. Moskva, Medgiz, 1963. 38 p. (MIRA 16:7)
(CORPULENCE)

SHAPIRO, Ya.Ye., prof.

Meteorism. Zdorov'e 9 no.1:31 Ja '63. (MIRA 16:7)
(INTESTINES, CASES IN)

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001548320019-8"

SHAPIRO, Yakov Yefimovich, doktor med. nauk, prof.; LAGUTINA, Ye.V., red.

[Ways for the prevention and treatment of coronary disease] Puti profilaktiki i lecheniia koronarnoi bolezni. Moskva, Izd-vo "Znanie," 1964. 47 p. (Narodnyi universitet kul'tury: Fakul'tet zdorov'ia, no.11) (MIRA 17:7)

GUKASYAN, Aram Grigor'yevich; SHAPIRO, Ya.Ye., red.

[Internal diseases] Vnutrennie bolezni. Izd.5., ispr. i dop. Moskva, Meditsina, 1965. 523 p. (MIRA 18:6)

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001548320019-8"

SHAPIRO, Ye.; SVETLICHKO, I.

Importance of ophthalmodynamometric studies in insufficiency of cerebral circulation. Zhur. nevr. i psikh. 63 no.4:517-525 '63. (MIRA 17:2)

1. Klinika neyrokhirurgii (zav. - prof. Ye. Shapiro) i Klinika glaznykh bolezney (zav. - prof. Ya. Sobanskiy) Meditsinskoy akademii, Lodz'.

SULIN, V.A., inzh.; VA[illegible]V, K., starshiy tekhnik (g.Volzhskiy); VORONOV, Dm. (g.Ashkhabad); [illegible]ATRAYNOV, A., elektrik (g.Gor'kiy); SHAPIRO, Ye.; KOPCSOV, N., inzh. (g.Leningrad)

Suggested, created, introduced. Izobr.i rats. no.6:38-40 Je '60. (MIRA 14:2)

1. Byuro sodeystviya ratsionalizatsii i i izobretatel'stvu Gosudarstvennogo soyuznogo konstruktorsko-tekhnologicheskogo byuro po proyektirovaniyu schetnykh mashin, g.Leningrad (for Sulin). 2. Sotrudnik gazety "Stroitel", g.Baku (for Shapiro).

(Technological innovations)

SHAPIRO, E.A.

FIZ. MET. I METALL, VOL. 1, No. 1, 1955

MG

Vibrational endurance tests on electrotechnical steels by E. A. Shapiro (p. 176-179) - Fatigue tests on a number of Russian transformer steels are reported. Specimen strips were cut parallel and at right angles to the direction of rolling and vibrated with the aid of an electromagnet with one end clamped. Results of a few fatigue bend tests are also given.

AUTHOR: Shapiro, Ye.A., Engineer. 110-4-8/25

TITLE: The Operation of Coil Springs at Stresses above the Yield Point (Rabota vintovykh pruzhin pri napryazheniyakh vyshe predela tekuchesti)

PERIODICAL: Vestnik Elektropromyshlennosti, 1958, No. 4, pp. 26 - 28 (USSR)

ABSTRACT: High-voltage apparatus contains a large number of springs operating in tension or compression. Most of these are made of carbon spring wire to standard ГОСТ-5047-49 up to 8 mm diameter. The springs should be stable and should not break. Using tension springs made of carbon steel grade B as specimens, residual strain measurements were made after various numbers of cycles up to 50 000 cycles and thereafter every 2 000 - 5 000 cycles until visible cracks appeared and the spring failed. The table gives results of residual stress determinations on three specimens. The tests show that after the appearance of cracks, the springs may continue to operate for 600 - 4 500 cycles.
The relationship between the number of cycles and the stress was tested on springs made of wire grade П. The ultimate strength of the wire in tension was 130 kg/mm^2 and the springs operated with maximum tangential stresses ranging from

55 - 84.5 kg/mm^2. The relationship between this stress and the number of cycles is plotted. The results are represented by an empirical formula which may be used to determine the stress at which a spring can operate without failure for a given number of cycles.
Investigations were made of the length of time that pieces of a spring can go on operating after the first failure. For example, if the first failure takes place after some 300 cycles at stresses of 50 kg/mm^2, a second failure occurs 5 - 15 000 cycles later. The test results show that considerable over-stresses cause fatigue cracks to develop in several places simultaneously; a sample was observed with three deep cracks. In actual service in high-voltage equipment, springs are maintained under static load for a long time. The influence of prolonged static loading was therefore investigated by three kinds of tests. Static loads up to a tangential stress of 68 kg/mm^2 were maintained for up to 75 000 hours at room temperature. None of the springs failed. Then, static loads, applied for periods up to 1 000 hours, were followed by dynamic fatigue tests. The static load did not affect the results. Next, static load was applied after dynamic loading and

maintained for 6 000 hours. All the springs withstood this test, including two which already had deep fatigue cracks. It is concluded that coil springs made of carbon spring wire, grades П and B, of 5 -6 mm diameter can operate with mean tangential stresses of up to 70 kg/mm^2 for 50 000 - 200 000 working cycles. With dynamic loading, failure occurs after 50 000 cycles; a definite relationship exists between the stress and the number of cycles. Static tests did not cause failure even when stresses up to 68 kg/mm^2 were applied for 75 000 hours. Alternation of static and dynamic test conditions had no important influence on either the static or the dynamic fatigue strength of the springs.
There are 1 figure, and 1 table.

ASSOCIATION: Uralelektroapparat Works (Zavod"Uralelektroapparat")

SUBMITTED: March 14, 1957

AVAILABLE: Library of Congress

Card 3/3

SHAPIRO, Ye. A., Engr. Cand. Tech. Sci.

Dissertation: "Wear of Gages." Moscow Aviation Technological Inst, 24 Apr 47.

SO: Vechernyaya Moskva, Apr, 1947 (Project #17836)

SHAPIRO, Ye. A., Cand. Tech. Sci. (diss) "Investigation and Computation of Limited Fatigue Strength of Helical Springs," Sverdlovsk, 1961, 18 pp. (Urals Polytech. Inst.) 150 copies (KL Supp 12-61, 277).

SHAPIRO, Ye.A.; MASHINSKIY, I.A.

Possibilities and methods for increasing labor productivity in petroleum refineries. Dokl.AN Arm.SSR 24 no.2:28-30 '57.
(MLRA 10:4)

(Petroleum--Refining)

SHAPIRO, Ye.A.; ZHUKOVSKIY, Ye.S.; MUSTAFABEKOVA, A.A.; MIKHAYLOV, N.D.; KOBYLYANSKIY, A.N.; KONONYKHIN, A.G.; EPSHTEYN, R.R.; KARPINSKIY, V.F.; DAVYDOVA, R.T.; TROITSKIY, V.I., red.; GOR'KOVA, A.A., vedushchiy red.; FEDOTOVA, I.G., tekhn.red.

[Establishing standards for material consumption and stocks in the petroleum industry] Normirovanie raskhoda i proizvodstvennykh zapasov osnovnykh materialov v neftianoi promyshlennosti. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1959. 252 p. (MIRA 12:12)

(Petroleum industry--Standards)

SHAPIRO, E. A.

A change in the absorptive properties of the endings and terminal branches of a motor nerve in conditions of physiological activity. E. A. Shapiro (*C. R. Acad. Sci. U.R.S.S.*, 1953, **88**, 1075—1078).—The proportion of motor nerve endings of frog's sciatic nerve which were stained after 4 min. immersion of the nerve and the sartorius muscle in a methylene blue solution was found to be increased by stimulation of the nerve at 25—200 per sec. during the immersion.

G. S. BRINDLEY.

Leningrad State U. im. A.A. Zhdanov & Zool. Inst, AS USSR

ROZENTAL', D.L.; SHAPIRO, Ye.A.

Excitability of a nerve in the crab Hyas coarctatus induced by changing the distance between electrodes. Dokl. AN SSSR 108 no.5:977-980 Je '56. (MLRA 9:10)

1. Zoologicheskiy institut Akademii nauk SSSR. Predstavleno akademikom Ye.N. Pavlovskim.

(CRABS) (ELECTROPHYSIOLOGY)

POLYANSKIY, Yu.I., otv.red.; LOZINA-LOZINSKIY, L.K., zamestitel' otv. red.; VOROB'YEV, V.I., red.; ZHIRMUNSKIY, A.V., red.; KUSAKINA, A.A., red.; RUMYANTSEV, P.P., red.; SHAPIRO, Ye.A., red.; SERGEYEVA, G.I., red.izd-va; BLEYKH, E.Yu., tekhn.red.

[Problems of cytology and protistology; collection of articles] Voprosy tsitologii i protistologii; sbornik rabot. Moskva, 1960. 316 p. (MIRA 13:2)

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(CELLS)