SAYASOV, Yu.S., MEL'NIKOV, V.K.

Theory of the capture of particles into the synchronous accelerating regime allowing for the nonconservation of the equation of motion. Zhur. tekhn. fiz. 30 no.6:656-664 Je '60.

(MIRA 13:8)

1. Institut khimicheskoy fiziki AN SSSR, Moskva.
         (Particles (Nuclear)—Capture)

MELNIKOV, V. K. and SAYASOV, YU. S.

"The theory of particle capture into synchrotron acceleration regime
with account of non-conversation of motion equations."

Paper presented at the Intl. Symposium on Nonlinear Vibrations, Kiev, USSR,
9-19 Sep 61

Institute of Chemical Physics of the USSR Academy of Sciences, USSR

16.3400   24.4200

S/020/61/139/001/003/018
C111/C222

AUTHOR: Mel'nikov, V.

TITLE: Determination of the capture region for a system approaching to the Hamiltonian system

PERIODICAL: Akademiya nauk SSSR, Doklady. v 139, no. 1, 1961, 31-33

TEXT. Given the system

$$\dot{x} = \frac{\partial H}{\partial y} + f(x,y,t,\varepsilon), \qquad \dot{y} = \frac{\partial H}{\partial x} + g(x,y,t,\varepsilon), \qquad (I_\varepsilon)$$

where $H = H(x,y)$ is analytic in x,y; $f(x,y,t,\varepsilon)$, $g(x,y,t,\varepsilon)$ are analytic in x,y,ε and continuous together with the first derivative in t and 2π-periodic in t. Let (x_c,y_c) be a whirl of the system (I_0) (i.e. $(I_\varepsilon$ with $\varepsilon = 0)$, where the maximal neighborhood of (x_0,y_0) which is filled up by closed trajectories of (I_0) lies in a bounded region of the plane. Let all positions of equilibrium of (I_0) be simple.

Theorem 1: Let (x_s,y_s) be an arbitrary saddle of (I_0). Then there exists a coordinate transformation

$$x = x_s + \alpha(u + \varepsilon p(t,\varepsilon))\cos\varphi - \frac{1}{\alpha}(v + \varepsilon q(t,\varepsilon))\sin\varphi ,$$

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Determination of the capture region   S/020/61/139/001/003/018
C111/C222

$$y = y_s + \alpha(u + \xi p(t, \xi))\sin\varphi + \frac{1}{\alpha}(v + \xi q(t, \xi))\cos\varphi,$$

where α and φ are constant; $p(t, \xi)$ and $q(t, \xi)$ are analytic in ξ in the neighborhood of $\xi = 0$ and 2π-periodic in t and have continuous first and second partial derivatives with respect to t, so that the system (I_f) in the new variables assumes the form

$$\dot{u} = \lambda v - \frac{\partial \widetilde{H}}{\partial v} + \xi \widetilde{f}(u, v, t, \xi) \qquad \dot{v} = \lambda u + \frac{\partial \widetilde{H}}{\partial u} + \xi \widetilde{g}(u, v, t, \xi), \quad (II_\xi)$$

where $\lambda > 0$. $f(0, 0, t, \xi) = g(0, 0, t, \xi) = 0$, and the development of $\widetilde{H} = \widetilde{H}(u, v)$ in the neighborhood of $(0, 0)$ begins with terms of at least third order,

(II_ξ) is called the standard form of (I_f) in the neighborhood of the saddle. The solution $(u_\xi(t), v_\xi(t))$ of (II_ξ) is called a boundary solution if it is defined for all t being greater than one t_0,

$|u_\xi(t)| + |v_\xi(t)| \to 0$ for $t \to \infty$, and there exists a t_1 so that $\frac{d}{dt}|u_\xi(t)| < 0$ and $\frac{d}{dt}|v_\xi(t)| < 0$ for $t > t_1$. For an arbitrary t_0 let $\Gamma_\xi(t_0)$ denote the set of the points of the plane (x_0, y_0) from which for $t = t_0$ there

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26471
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originate boundary trajectories of (I_ξ)

Theorem 2: Let $\Delta = \overline{E}^2 \setminus \Gamma_\xi(t_0)$, where $\overline{E}^2$ is an arbitrary bounded part of the plane (x_0, y_0) from which the isolated points of the set $\overline{\Gamma}_\xi(t_0) \setminus \Gamma_\xi'(t_0)$ are separated. Let $\Delta' \subset \Delta$ be an arbitrary linearly connected set. In Δ' let exist a point (x_0, y_0) from which for $t = t_0$ there originates an oscillating solution of (I_ξ). Then for sufficiently small ξ every other solution of (I_ξ) which for $t = t_0$ originates from a point of Δ' will also be oscillating.

Theorem 3: There exist $\xi_0 > 0$. $\delta_0 > 0$ so that for arbitrary complex ξ, u_0, satisfying the conditions $|\xi| < \xi_0$ and $|u_0| < \delta_0$, and an arbitrary t_0 there exists a unique solution $(u_\xi(t), v_\xi(t))$ of (II_ξ) so that $u_\xi(t_0) = u_0$, $\frac{d}{dt}|u_\xi(t)| < 0$ and $\frac{d}{dt}|v_\xi(t)| < 0$ for all $t \geq t_0$ and $|u_\xi(t)| + |v_\xi(t)| \to 0$ for $t \to \infty$.

Theorem 4: There exist $\xi_1 > 0$. $\delta_1 > 0$ so that for all complex ξ, u_0, satisfying the conditions $|\xi| < \xi_0$, $|u_0| < \delta$, and every t_0 the solution

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$(u_\xi(t), v_\xi(t))$ of (II_ξ) which satisfies the conditions: $u_\xi(t_0)=u_0$, $\frac{d}{dt}|u_\xi(t)| < 0$, $\frac{d}{dt}|v_\xi(t)| < 0$ for all $t \geqslant t_0$; $|u_\xi(t)| + |v_\xi(t)| \to 0$ for $t \to \infty$, has continuous partial derivatives with respect to $\mu = \mathrm{Re}\,\xi$ and $\nu = \mathrm{Im}\,\xi$ which for all $t \geqslant t_0$ satisfy the Cauchy-Riemannian conditions.

Theorem 5: Let G_c be the maximal neighborhood of (x_c, y_c) filled up by closed trajectories of (I_0). All positions of equilibrium of the saddle type lying on the boundary of G_c are numbered clockwise from 1 to n. The motion on the closed trajectories of (I_0) lying in G_c is carried out also clockwise (if it is not the case then it can always be reached by replacing t by -t). Let $(x_i(t), y_i(t))$ $(i=1,2,\ldots,n)$ be the solution of (I_0) tending to the i-th position of equilibrium of the saddle type for $t \to -\infty$ and tending to the $(i+1)^{st}$ position for $t \to +\infty$ (for i = n, the $(i+1)^{st}$ position is the first position of equilibrium). Let the

$$I_i(t_0) = \int_{-\infty}^{\infty} \left\{ f(x_i(t), y_i(t), t-t_0, 0)\dot{y}_i(t) - g(x_i(t), y_i(t), t-t_0, 0)\dot{x}_i(t) \right\} dt$$

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Determination of the capture region... 25471   S/020/61/139/001/003/018
C111/C222

be so that $\sum_{i=1}^{n} \int_{0}^{2\pi} I_i(t_0) dt_0 > 0$. For $\delta > 0$ let $G^-_{c,\delta} \subset G_c$ be the set of points

of G_c the distance of which from the boundary of G_c is greater than δ; let $G^+_{c,\delta} \supset G_c$ be the δ-neighborhood of $\overline{G}_c$. Then for sufficiently small $\varepsilon > 0$ there exists a $\delta(\varepsilon) > 0$ so that all solutions of (I_ε) which for $t = t_0$ originate from the region $G^-_{c,\delta}(\varepsilon)$ are oscillating while their trajectories for $t \geq t_0$ do not leave the region $G^+_{c,\delta}(\varepsilon)$, where $\delta(\varepsilon) \to 0$ for $\varepsilon \to +0$.

The author thanks S.V.Fomin for aid. There are 4 Soviet-bloc and 2 non-Soviet-bloc references.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (United Institute of Nuclear Research)

PRESENTED: February 21, 1961, by P.S.Aleksandrov, Academician

SUBMITTED: February 1, 1961

Card 5/5

MEL'NIKOV, V.K.; SARANTSEVA, V.R.

[Lines of force of magnetic field] O silovykh liniiakh mag-
nitnogo polia. Dubna, Ob"edinennyi in-t iadernykh issl.,
1962. 9 p.   (MIRA 15:4)
              (Magnetic fields)

MEL'NIKOV, V.K.

["Qualitative description of resonance phenomena in a non-
linear system (I)]Kachestvennoe opisanie rezonansnykh iavle-
nii v nelineinoi sisteme (I). Dubna, Ob"edinennyi in-t iader-
nykh issl., 1962. 16 p.   (MIRA 15:10)
                        (Cyclotron resonance)

MEL'NIKOV, V.K.; BLUM, E.Ya.

Experimental method for determining the integral coefficient
of beam absorptivity for a furnace medium. Inzh.-fiz.zhur.
5 no.8:34-39 Ag '62.   (MIRA 15:11)

1. Institut energetiki AN Latviyskoy SSR, Riga.
         (Heat—Radiation and absorption)

/6 3400

AUTHOR: Mel'nikov, V.

TITLE: The behavior of the trajectories of a system which is very
similar to an autonomous Hamiltonian system

PERIODICAL: Akademiya nauk SSSR, Doklady, v. 142, no. 3, 1962, 542-545

TEXT: The author considers the system

$$\dot{x} = \partial H/\partial y + \mathcal{E}f(x,y,t,\mathcal{E}) \ , \ y = - \ \partial H/\partial x + \mathcal{E}g(x,y,t,\mathcal{E}) \ , \qquad (1_{\mathcal{E}})$$

where $H = H(x,y)$ is analytic in a certain neighborhood of $(0,0)$; f and g
are analytic in a neighborhood of $x = y = \mathcal{E} = 0$, $2\tilde{\pi}$ -periodic in t and
continuous in ι together with the first derivatives with respect to t.
Furthermore, let for $x=y=0$, $\partial H/\partial x = \partial H/\partial y = 0$, $\Delta = (\partial^2 H/\partial x^2)(\partial^2 H/\partial y^2)$·
$- (\partial^2 H/\partial x \partial y)^2 > 0$. Besides $(1_{\mathcal{E}})$ the author considers the system (1_{o})
which arises from $(1_{\mathcal{E}})$ for $\mathcal{E} = 0$ and which has a vortex point in (0.0)
under the above assumptions. Instead of the variables x,y the author

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S/020/62/142/003/007/027
C111/C333

The behavior of the trajectories ...

introduces the new variables $H = H(x,y)$, $\varphi = \varphi(x,y)$, where φ in a certain sense acts the rôle of time on the solution curves of (1_0) and is defined with the aid of the orthogonal trajectories of the solutions of (1_0); φ satisfies the equation

$$\frac{\partial H}{\partial y} \frac{\partial \varphi}{\partial x} - \frac{\partial H}{\partial x} \frac{\partial \varphi}{\partial y} = 1,$$

After two further transformations of the variables the author brings (1_ϵ) to the form

$$u = \mu A_0(v) + \mu^2 R(u,v,t,\mu), \quad v = \mu au + \mu^2 S(u,v,t,\mu), \quad (3_\mu)$$

where $\mu = \sqrt{\epsilon}$, R and S are analytic in u, v, μ, continuous in t together with the first derivatives with respect to t and $2m\pi$-periodic in t, while $A_0(v)$ is defined by

$$A_0(v) = \frac{1}{2m\pi} \int_0^{2m\pi} \left\{ f(x_0(t+v), y_0(t+v), t, 0) \dot{y}_0(t+v) + g(x_0(t+v), y_0(t+v)t, 0) \dot{x}_0(t+v) \right\} dt$$

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The behavior of the trajectories   ...   S/020/62/142/003/007/027
C111/C333

where $(x_0(t), y_0(t))$ is a $2\mathcal{C}m/n$-periodic solution of (1_0) ; the function $A_0(v)$ is analytic in v and has the period $2\widetilde{\iota}/n$.

The behavior of the trajectories of (1_ε) is described with the aid of the function $A_0(v)$.

If $A_0(v)$ possesses no zero, then every solution of (1_ε) with $\varepsilon < \mu_0^2$. beginning in the domain $H_{m,n} - \mu\delta_0 < H(x,y) < H_{m,n} + \mu\delta_0$ for $t = 0$, will remain in the domain $H(x,y) < H_{m,n} - \mu\delta_0$ or $H(x,y) > H_{m,n} + \mu\delta_0$ for all $t > c_0/\mu$ (theorem 1).

If $A_0(v)$ possesses simple zeros, then (3_μ) is further transformed, and that in order to obtain a system analogous to that from the paper of the author (Ref. 1 : DAN, 139, no. 1, 31 (1961)). Under the assumption that $A_0(v_r) = 0$, $aA_0'(v_r) > 0$, the author gives without proof two theorems on the behavior of special solutions for the transformed system. The author

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asserts that one can show with the aid of these results that under certain
assumptions the neighborhood of $x=y=0$ is decomposed into pairwise dis-
joint domains G_k (k = 1,...,m) such that every solution of (1_ϵ) beginning

in G_m in the moment $t = t_o$, comes into the domain G_k in the moment

$t = t_o + 2k\mathcal{U}$ ($0 < k \leq m$), where m can be arbitrarily small for sufficiently
small $\epsilon \neq 0$.
There are 2 Soviet-bloc references.

PRESENTED: September 4, 1961, by N.N. Bogolyubov, Academician
SUBMITTED: August 26, 1961

Card 4/4

S/020/62/144/004/007/024
B125/B108

AUTHOR: Mel'nikov, V. K.

TITLE: The lines of force of a magnetic field

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 4, 1962, 747-750

TEXT: The motion of a plasma in a given magnetic field can be studied by finding the lines of force of this field. As an example, the irrotational field given by the scalar potential $H_o z + \Psi(x, y, z)$ is investigated. The function $\Psi(x, y, z)$ is periodic in z with the period $2d$ and satisfies the Laplacian equation. $\int_o^{2d} \Psi(x, y, z)dz = 0$. From the equations for the lines of force of this field, the equations $du/dz = F_v'(u, v)/H_o^2$ and $dv/dz = -F_u'(u, v)/H_o^2$ follow for the trajectories shown in Fig. 1. The full lines in Fig. 2 show the section of the separatrix of the transformed equations for the lines of force in the plane $z = z_o$. The dashed line is found after replacing z by -z in this system of equations. The arrows
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The lines of force of ...

S/020/62/144/004/007/024
B125/B118

mark the direction of displacement of the points of the section caused by a z-displacement $\Delta z = 2\Gamma$. Some solutions can be outside the shaded region in Fig. 2 when z increases. The percentage of solutions outside this shaded region depends on the distance AB. For $H_0 \to \infty$, this distance tends toward zero as $e^{-H_0^2}$ where $x > 0$. A helical field (disturbed by a corrugated field) with three turns has the trajectories shown in Fig. 3. There are 4 figures.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

PRESENTED: March 3, 1962, by N. N. Bogolyubov, Academician

SUBMITTED: February 17, 1962

Fig. 1.
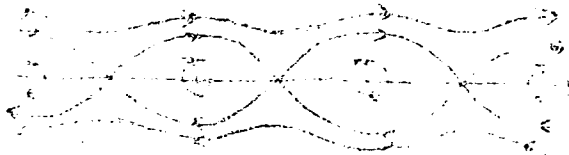
Card 2/4

MEL'NIKOV, V.K., inzh.

Survey of devices for measuring radiant heat flow in furnaces.
Teploenergetika 10 no.7:47-51 Jl '63.   (MIRA 16:7)

1. Institut energetiki AN Latviyskoy SSR.
          (Furnaces)   (Heat—Transmission)

S/020/63/148/006/004/023
B112/B186

AUTHOR: Mel'nikov, V. K.

TITLE: A qualitative description of a strong resonance in a
             non-linear system

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 6, 1963, 1257-1260

TEXT: The system

$$\dot{x} = \nu y + f(x,y,t), \quad \dot{y} = -\nu x + g(x,y,t) \qquad (1)$$

is considered, where $\nu > 0$, and where $f(x,y,t)$ and $g(x,y,t)$ are analytic
functions for $|x| < R_o$, $|y| < R_o$, $|\text{Im } t| < \nu_o$ $(R_o > 0, \nu_o > 0)$. Furthermore,
f and g are assumed to have the period 2π with respect to t and power
series expansions with respect to x and y without terms of the first
degree. Conditions for strong resonance are derived and,for this case,
the course of the trajectories is described. The method may be applied
to investigating the stability of radial oscillations in an isochronic
cyclotron. There are 4 figures.

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A qualitative description of a strong ... B112/B186

S/020/63/148/006/004/023

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy
               (Joint Institute of Nuclear Research)

PRESENTED: November 25, 1962, by P. S. Aleksandrov, Academician

SUBMITTED: September 1, 1962

Card 2/2

MEL'NIKOV, V.K.

Lines of force of a magnetic field composed of helical currents moving around a tore. Dokl. AN SSSR 149 no.5:1056-1059 Ap '63.   (MIRA 16:5)

1. Ob"yedinennyy institut yadernykh issledovaniy. Predstavleno akademikom L.A.Artsimovichem.
                    (Magnetic fields)

L 25781-66   EWT(1)/T   IJP(c)

ACC NR: AP6016362   SOURCE CODE: UR/0371/65/000/004/0099/0106

AUTHOR: Mel'nikov, V. K.—Melnikov, V.

ORG: Institute of Power Engineering, AN LatSSR (Institut energetiki AN LatSSR)

TITLE: Method for the experimental determination of the degree of blackness of solids

SOURCE: AN LatSSR. Izvestiya. Seriya fizicheskikh i tekhnicheskikh nauk, no. 4, 1965, 99-106

TOPIC TAGS: radiometer, optic black body, furnace, refractory, metal property

ABSTRACT: The article describes an experimental apparatus for determining the blackness of hard materials at pressures of 50 - 130 n/m^2 and temperatures up to 1200° C. The principal units of the apparatus are a model of a black body, a radiometer, a heater, and a hermetic chamber. Serving as the model of the black body is an electric tubular furnace, welded and made of steel. The results of the investigation of certain metals and refractories are given. The results for the metals show that below atmospheric pressure the degree of blackness is mainly determined by the surface oxidation. The values obtained for the coefficients of emission for the refractories were found to be in strong disagreement with existing data.
       The author concludes that the results obtained make it possible to plan for further research into the emissive characteristics of hard materials at higher temperatures and lower pressures. Orig. art. has: 5 figures, 3 formulas, and 2 tables. [JPRS]

SUB CODE: 11, 20 / SUBM DATE: 07Apr65 / ORIG REF: 005 / OTH REF: 001
Card 1/1 CA

MEL'NIKOV, V.K.; BLUM, E.Ya.

Reply to A.S. Nevskii's remarks. Inzh.-fiz. zhur. 10 no.1:137-138
Ja '66.   (MIRA 19:2)

1. Institut energetiki AN Latviyskoy SSR, Riga. Submitted July 5,
1965.

MEL'NIKOV, V.K.; SERGEYEV, L.I.; SAKHOV, N.S.

Radioactive phosphorus as an indicator and stimulant of physiological processes in woody plants. Trudy Inst. biol. UFAN SSSR no. 43:99-102 '65   (MIRA 19:1)

1. Institut biologii Bashkirskogo gosudarstvennogo universiteta.

L 58334-65   EWT(1)/EPF(n)-2/EWG(m)/EPA(w)-2   Pz-6/Po-4/Pab-10/Pi-4   IJP(c)
WW/AT
ACCESSION NR: AT5010442   UR/3136/64/000/668/0001/0010

AUTHOR: Karmanov, F. V.; Mel'nikov, V. K.

TITLE: On the compensation of perturbation of a helical magnetic field

SOURCE: Moscow. Institut atomnoy energii. Doklady, no. 668, 1964. O kompensa-
tsii vozmushcheniy vintovogo magnitnogo polya, 1-10

TOPIC TAGS: plasma perturbation, magnetic trap, magnetic field configuration,
magnetic field perturbation, plasma containment

ABSTRACT: Continuing earlier work by one of the authors (Mel'nikov, DAN v. 149,
no. 5, 1056, 1963), who proposed the idea of compensating the perturbations of a
helical magnetic field resulting from the drift of some part of the force lines
from the region bounded by separatrix branches, the authors report that they have
confirmed experimentally the conditions under which the perturbations can be com-
pensated for. They also show that in the case when the compensation conditions are
not satisfied, the drift of the force lines becomes stronger. The particular per-
turbation considered is that of a trifilar helical magnetic field by a combination
of a bifilar magnetic field and a constant perpendicular magnetic field. The ex-

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L 58334-65
ACCESSION NR: AT5010442   *3*

perimental set-up is shown in Fig. 1 of the Enclosure and constitutes a vacuum
chamber of cylindrical form, on one of which is the electron source and on the
other a luminescent screen. The inside radius of the chamber was 5 cm and the
distance from the source to the screen was 230 cm. "The authors thank B. I.
Gavrilov, G. P. Maksimov, and P. A. Cheremnykh for help with the work and for
valuable advice." Orig. art. has: 2 figures and 2 formulas.

ASSOCIATION: none

SUBMITTED: 00   ENCL: 01   SUB CODE: ME

NR REF SOV: 003   OTHER: 000

Card 2/3

L 58334-65
ACCESSION NR: AT5010442

ENCLOSURE: 01

1 - Coil,
2 - trifilar coil
3 - bifilacr coil
4 - compensating
    turn,
5 - luminor screen
6 - vacuum
    chamber
7 - cylindrizer
    of trifilar
    field
8 - electron
    source
9 - motor
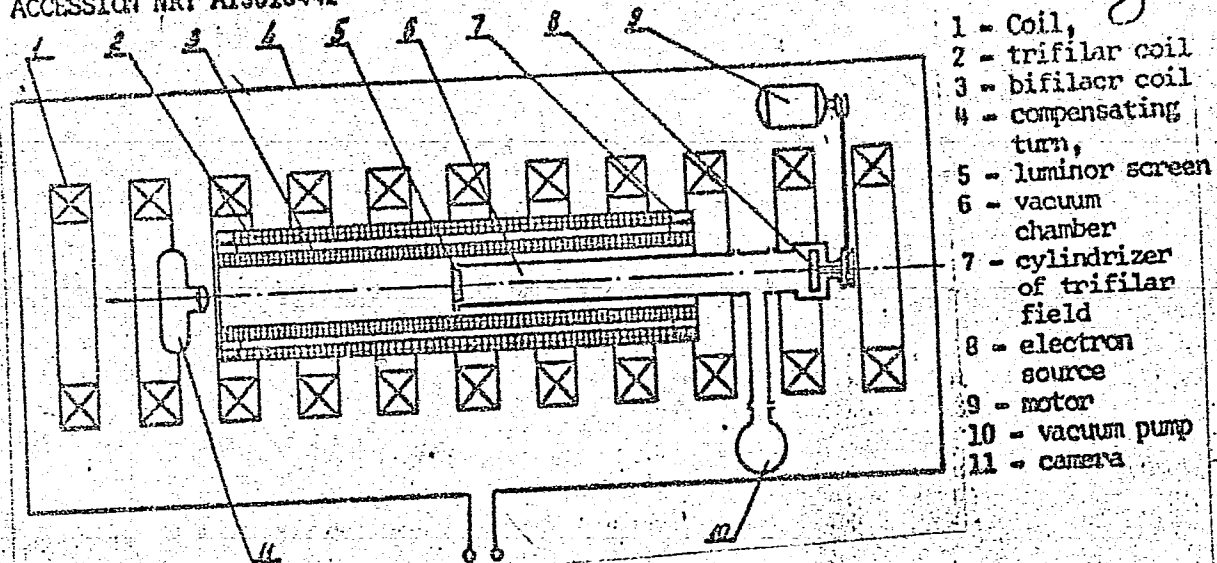10 - vacuum pump
11 - camera

Fig. 1. Diagram of installation.

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L 2107-66   EWP(e)/EWT(m)/EWP(w)/EPF(c)/EWP(i)/T/EWP(t)/EWP(b)/EWA(c)   JD/WW/WH

ACCESSION NR: AP5023293   UR/0371/65/000/004/0099/0106

AUTHOR: Melnikova, V. (Mel'nikov, V. K.)

TITLE: Method of experimental determination of the emissivity of solids

SOURCE: AN LatSSR. Izvestiya. Seriya fizicheskikh i tekhnicheskikh nauk, no. 4, 1965, 99-106

TOPIC TAGS: black body radiation, metal property, emissivity, refractory

ABSTRACT: An experimental device for studying the degree of blackness of some metals and refractory materials at pressures below atmospheric is described. Basically, the device consists of a sample of a black body, a radiometer, a heater, and a sealed chamber. It was used to measure the emissivity of steel, aluminum, graphite, and refractory clay at pressures ranging from 50 to 130 N/cm^2 and temperatures up to 1200C. In the case of the metals, it was found that emissivity at pressures below atmospheric is determined chiefly by the oxidation of the surface; this finding is in agreement with existing data. However, the values of emissivity obtained for refractory materials were found to be in sharp disagreement with existing data. It is concluded that data obtained with

Card 1/2

L 2107-66

ACCESSION NR: AP5023293

this device can be used for practical purposes only in the first approximation.
Orig. art. has: 5 figures, 2 tables, and 3 formulas.   [JR]

ASSOCIATION: Institut energetiki AN Latv SSR (Power Engineering Institute,
AN LatvSSR)

SUBMITTED: 07Apr65   ENCL: 00   SUB CODE: ECOP

NO REF SOV: 005   OTHER: 001   ATD PRESS: 4113

Card 2/2

L 2490-66   EWT(1)/ETC/EPF(n)-2/EWG(m)/EPA(w)-2   IJP(c)   AT

ACCESSION NR: AP5020722   UR/0057/65/035/008/1385/1389

AUTHOR: Karmanov, F. V.; Mel'nikov, V. K.

TITLE: On compensating distortions of a helical magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 8, 1965, 1385-1389

TOPIC TAGS: helical magnetic field, combined magnetic field, transverse magnetic field, perturbation, plasma confinement

ABSTRACT: One of the authors has previously given a theoretical treatment of distortions of a helical magnetic field and their compensation (V.K.Mel'nikov. DAN SSSR, 144, No.4, 747, 1962; ibid 149, No.5, 1056, 1963; Trudy Moskovsk. matem. obshch., 12, 3, 1963). Because of the large distortions of the separatrix produced by comparatively small perturbing fields, the authors consider it over-optimistic to anticipate only a small loss of particles to the walls of a stellarator owing to the toroidal geometry of the tube. The present paper reports an experimental test of the helical field perturbation compensation theory. A triple helical field of 150 cm reciprocal pitch was produced in a 5 cm radius 230 cm long cylindrical chamber by a 7 cm radius winding; a 100 cm reciprocal pitch double

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ACCESSION NR: AP5020722

helical perturbing field was produced by a 5.6 cm radius winding, and a plane com-
pensating field normal to the axis of the chamber was also provided. In addition
to these fields, there was a 400 Oe uniform magnetic field parallel to the axis
of the chamber. Electrons were injected at one end of the chamber, apparently by
a hot cathode that was rotated to assure an axially symmetric beam, and were caught
on a fluorescent screen at the other end of the chamber. The electron patterns on
the fluorescent screen were photographed for different strengths of the main heli-
cal field, the perturbing helical field, and the compensating field and are com-
pared with the predictions of the theory (loc cit supra), which are derived here
anew. The experimental results were in agreement with the theory. "The authors
consider it their pleasant duty to express their gratitude to B.I.Gavrilov, Ye.K.
Zavoyskiy, G.P.Maksimov, and P.A.Cheremnykh for valuable advice and assistance
with the work." Orig. art. has: 13 formulas and 7 figures.

ASSOCIATION: none

SUBMITTED: 07Dec64   ENCL: 00   SUB CODE: EM, ME

NR REF SOV: 003   OTHER: 000

Card 2/2

MEL'NIKOV, V.M.

Childbirth in the case of conjoined twins. Zdrav. Bel. 7 no.6:58-
59 Je '61.   (MIRA 15:2)

1. Iz rodil'nogo otdeleniya Zhlobinskoy rayonnoy bol'nitsy.
        (LABOR (OSTETRICS))   (TWINS)

MEL'NIKOV, V.M., inzhener.

Irrigation in Egypt. Gidr. i mel. 8 no.12:49-59 D'56.

(MIRA 10:1)

(Egypt--Irrigation)

AUTHOR: Mel'nikov, V. M., Engineer   SOV/99-59-1-5/13

TITLE: To Increase the Operating Efficiency of Irrigation
              Systems (Povysit' proizvoditel'nost' orositel'nykh
              sistem)

PERIODICAL: Gidrotekhnika i melioratsiya, 1959, Nr 1, pp 29-30
              (USSR)

ABSTRACT: The total length of irrigation canals in the USSR
              is 500,000 km, and at the height of the season,
              total water deliveries are 8-10,000 cu m per
              second, of which about 50% are lost by filtration.
              The author recommends the use of prestressed pre-
              fabricated concrete parts for the lining of these
              canals and irrigation structures, and the use of
              ceramic and asbestos - cement pipes. Losses of
              water as well as the water-logging and salination

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SOV/99-59-1-5/13

To Increase the Operating Efficiency of Irrigation Systems

of irrigated land will be greatly reduced. He
also recommends the introduction of the sprin-
kling method

Card 2/2

30(1)   SOV/99-59-11-1/15
AUTHOR: Zasukhin, S.V., and Mel'nikov, V.M., Engineers
TITLE: Some Urgent Problems in the Development of the Country's
              Water Resources
PERIODICAL: Gidrotekhnika i melioratsiya, 1959, Nr 11, pp 3-8
              (USSR)

ABSTRACT: This article deals with the development of water re-
              sources in the Soviet Union, particularly in relation
              to irrigation and water supply, drainage and reclama-
              tion work. The authors first review recent work in
              these fields and the current state of water resources
              in the country. For the period 1952-1958 over 9 bil-
              lion rubles were invested in water resources, of
              which about 7 billion rubles were for irrigation.
              During this period the overall irrigated land area
              increased by 1,100 thousand hectares, 540,000 hecta-
              res of which were in the cotton growing regions. In
              this same period 2 million hectares of land were drai-
              ned, and between 1956 and 1958 480,000 hectares of
              land in Lithuania, Latvia, and Estonia   were   drai-
Card 1/4   ned, in connection with large scale land reclamation

SOV/99-59-11-1/15

Some Urgent Problems in the Development of the Country's
Water Resources

        projects in the Baltic states. As of January 1, 1959
there were about 150,000,000 hectares of irrigated pas-
ture land in the entire USSR. Between 1954 and 1958
50,000 bore and cartesian wells were sunk. Among the
technical facilities in use on water resource develop-
ment, the authors mention 5000 excavators, 3,700 bull-
dozers and 3000 scrapers. 20 billion rubles are to be
invested in water resources development during the
1959-1965 period; the irrigated land area will increa-
se by 2 million hectares, by over 1 million hectares
in the cotton growing republics alone, during this
period, drainage work will embrace an area of approxi-
mately 4 million hectares, and 79 million hectares of
pasture land are to be supplied with water. Reference
is made to a resolution of the Council of Ministers
of the USSR entitled "On Measures to Assure the Com-
plex Mechanization of Work in Cotton Growing" which
pointed to unsatisfactory utilization of land and wa-

Card 2/4   ter resources in irrigated areas; the authors also

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Some Urgent Problems in the Development of the
Country's Water Resources

        note non-utilization of land with a guaranteed water
supply, particularly in Kazakhstan and the RSFSR, as
well as in Azerbaydzhan. The problem of reducing
the amount of manual labor in irrigation operations
is treated; mechanization of cleaning irrigation
systems of deposits and vegetation deserves special
attention. The need for wider use of sprinkler sys-
tems is dealt with; the USSR, state the authors, has
developed and successfully tested sprinkling equip-
ment which should be put into serial production.
Necessary also is expansion and improvement of the
drainage system in order to combat soil salinity in
the cotton growing regions of the republics of Cen-
tral Asia, Kazakhstan and Azerbaydzhan. Another se-
rious problem is water loss in irrigation systems
through filtration. In addition it is noted that
irrigation systems are poorly equipped with water
distribution and measuring equipment; communications

Card 3/4   and transport facilities are inadequate at present.

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Some Urgent Problems in the Development of the
Country's Water Resources

The authors dwell on the subject of necessary land
reclamation and development work, particularly in
areas outside the black soil belt. Improvement in
the mechanization of this work, the development of
new excavators and machinery for land reclamation
work is also treated. The importance of rational
utilization of pasture land in dry areas of the USSR,
and water supply on this land is stressed. No less
important is the problem of water supply to livestock
farms and the need for increased mechanization in this
field. The authors conclude with a note on the res-
ponsibility of state and collective farms vis-à-vis
irrigation systems, and the role of scientific-re-
search institutions in their further development.

Card 4/4

PLEKHANOV, G.V.; PODVYSOTSKIY, K.S.; MEL'NIKOV, V.M.

Review of the book "Mine brattices" by IA. Z. Bukhman and P.G.
Molotkov. Gor. zhur. no.6:80 Je '63.   (MIRA 16:7)

1. Glavnyy inzh. shakhty "Magnetitovaya" Vysokogorskogo zheleznogo
rudnika (for Plekhanov). 2. Komandir 4-go Voyenizirovannogo
gornospasatel'nogo otryada Vysokogorskogo zheleznogo rudnika
(for Podvysotskiy). 3. Nachal'nik ventilyatsii shakhty
"Magentitovaya" (for Mel'nikov).
                   (Mine ventilation)
        (Bukhman, IA.Z.)   (Molotkov, P.G.)

MEL'NIKOV, V.N.

Selecting the optimum color of enmeshing fishing gear. Izv.vys.-
ucheb.zav.; pishch.tekh. no.1:99-102 '63.   (MIRA 16:3)

1. Astrakhanskiy tekhnicheskiy institut rybnoy promyshlennosti i
khozyaystva, kafedra promyshlennogo rybolovstva.
                              (Fishing nets)

MEL'NIKOV, V.N., inzhener; SHEKHTER, M.Ye., inzhener.

One hundred twenty fifth anniversary of the first Russian
industrial exhibition. Vest.mash. 34 no.11:91-93 N '54.
(MLRA 7:11)

(Russia--Industries--Exhibitions)

GORNSHTEYN, D.K.; GUDKOV, A.A.; KOSOLAPOV, A.I.; LEYPTSIG, A.V.;
        MEL'NIKOV, V.M.; MOKSHANTSEV, K.B.; FRADKIN, G.S.; CHERSKIY,
        N.V.; TROFIMUK, A.A., akademik, nauchn. red. vyp.; ROZHKOV,
        I.S., glav. red.; KOBELYATSKIY, I.A., zam. glav. red.;
        SHATALOV, Ye.G., zam. glav. red.; BONDARENKO, V.I., red.;
        GRINBERG, G.A., red.; YELOVSKIKH, V.V., red.; RUSANOV, B.S.,
        red.; SEMENOV, G.T., red.; TKACHENKO, B.V., red.; KALANTAROV,
        A.P., red.izd-va; GUSEVA, A.P., tekhn. red.

[Basic stages of the geological development and prospects for
finding oil and gas in the Yakut A.S.S.R.] Osnovnye etapy geo-
logicheskogo razvitiia i perspektivy neftegazonosnosti IAkut-
skoi ASSR. [by] D.K.Gornshtein i dr. Moskva, Izd-vo AN SSSR
1963. 238 p.   (MIRA 16:12)
            (Yakutia--Petroleum geology)
            (Yakutia--Gas, Natural--Geology)

S/096/62/000/002/003/008
E193/E383

AUTHORS   Rassokhin, N.G., Candidate of Technical Sciences and
           Mel'nikov, V.N., Engineer

TITLE   Corrosion- and erosion-resistance of zirconium alloys
           in circulating water

PERIODICAL Teploenergetika, no. 2, 1962, 60 - 62

TEXT   Experience has shown that zirconium alloys provide
most suitable materials for jackets of heat-emitting elements of
atomic-reactor piles, in which water is used as the moderator and
heat-exchange medium. The efficiency of reactors of this type
can be increased if the active zone of the heat-exchanger operates
under conditions of stable surface boiling. Data on the behaviour
of zirconium alloys operating under such conditions are scarce -
hence the present investigation concerned with the effect of
various factors on corrosion- and erosion-resistance of a
zirconium alloy containing 0.95% Nb, tested on tubular specimens
(10.3 mm in diameter) in a specially designed apparatus. The
experimental conditions are given in Table 1, the chemical analysis
of the water used in the experiments being given in Table 2
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After each experiment, the test piece was removed carefully from the testing machine, dried, photographed and subjected to microscopic examination and spectrographic analysis. The results can be summarized as follows:

1) visual examination of specimens tested at temperatures of up to 320 $^{\circ}$C showed that surface boiling had no effect whatever on the erosion of the alloys studied;

2) variation of the heat flux in the $0.3 \times 10^6 - 1.5 \times 10^6$ kcal/m^{2}h range, under normal heat-transfer conditions, had no effect on the rate of corrosion of the Zr-Nb alloy irrespective of the presence or absence of surface boiling. The rate of corrosion did not depend on the presence of the vapour phase in the stream of cooling water;

3) a changeover from pure convection to surface-boiling conditions did not affect the intensity of the formation of encrustation on the surface of the test piece.

4) the composition of the surface encrustation depended on both the heat-transfer and water-flow conditions. When both

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Corrosion- and ....

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corrosion products and hard-water constituents [Abstracter's note calcium salts] were present in water flowing over the test piece the encrustation in the convection zone consisted of the corrosion products, that formed in the surface-boiling zone comprising mainly the mineral constituents.

5) Localized (even of very short duration) disturbances of the normal heat-transfer conditions which caused the temperature of the test piece to rise above the permissible limit brought about localized corrosion. On returning to normal conditions, the process of corrosion did not cease, spreading to previously unaffected portions of the test piece. There are 2 figures. 2 tables and 4 references: 3 Soviet-bloc and 1 non-Soviet bloc The English-language reference mentioned is: Ref. 2: R.T. Esper W.E. Hopkins, Cb. Jacklin, J.H. Phillips - Proc. Amer. Power Conf., Chicago, Illinois, v.20, 697-708, March, 1958.

ASSOCIATION.   Moskovskiy energeticheskiy institut (Moscow Power-engineering Institute)

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Corrosion- and

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Table 1   Key. 1 - No. of experiment,   2 - No, of test piece,
3 - Duration of test, hours.   4 - Heat-loading on the test piece,
$kcal/m^2h$,   5 - Rate of flow of water cooling the specimen, m/sec
6   Water temperature, $^\circ C$ 7 - At the entry of the experimental
zone,   8 -   At the exit of the experimental zone;
9 - Temperature of the external surface of the test piece $^\circ C$,
10 - Water pressure, atm,

(See Card 5/6)

Card 4/6

MEL'NIKOV, V. N.

Engineer's manual on open pit mining. Izd. 2., perer. i dop. Moskva, Ugletekhizdat,
1952. 455 p. (53-16764)

T.N291.M4   1952

MEL'NIKOV, N.V.; SHEKHMEYSTER, Sh.Ya., gornyy inzh.; MEL'NIKOV, V.N.,
gornyy inzh.

Plan for strip mining in the Akkermanovka iron ore deposit.
Gor. zhur. no.4:14-17 Ap '61.   (MIRA 14:4)

1. Institut gornogo dela AN SSSR, Lyubertsy Moskovskoy obl.,
chlen-korrespondent AN SSSR (for Mel'nikov). 2. Giproruda, Leningrad
(for Shekhmeyster). 3. Orsko-Khalilovskiy metallurgicheskiy kombinat
(for Mel'nikov).
        (Akkermanovka—Iron mines and mining)   (Strip mining)

MEL'NIKOV, V.N.

Visibility requirements for stationary fishing gear. Izv.vys.
ucheb.zav.; pishch.tekh. no.1:114-116 '64.   (MIRA 17:4)

1. Astrakhanskiy tekhnicheskiy institut rybnoy promyshlennosti i
khozyaystva, kafedra promyshlennogo rybolovstva.

MEL'NIKOV, V.N.

Reaction to intracutaneous introduction of staphylococcus and smallpox
vaccine in stimulation of the higher sectors of the central nervous
system.   Zhur.mikrobiol.epid.i immun. no.4:79 Ap '54.   (MIRA 7:5)

1. Iz Ufimskogo instituta vaktsin i syvorotok i kafedry patologicheskoy
fiziologii Bashkirskogo meditsinskogo instituta.
          (Staphylococcus) (Smallpox) (Phenocoll)

USSR/Medicine - Typhoid Fever

FD-1628

Card 1/1   : Pub. 148-8/28

Author   : Mel'nikov, V. N.

Title   : The effect of drug-induced excitation of the central nervous system
                     on the course of typhoid fever toxicoinfections in white mice and
                     the accumulation of agglutinins during convalescence in rabbits

Periodical   : Zhur. mikro. epid. i immun. 7, 33-38, Jul 1954

Abstract   : The effect of phenamine on the rapidity and lethality of typhoid fever
                     toxicoinfections in white mice and of phenamine and strychnine on the
                     production of agglutinins in rabbits was investigated. The results of
                     the investigations are presented on six charts. No references are
                     cited.

Institution   : Ufimsk Institute of Vaccines and Serums imeni Mechnikov (Director-U.S.
                     Yenikeyeva; Scientific Director-Prof. N. I. Mel'nikov)

Submitted   : October 13, 1953

USSR / Microbiology. Microbes, Pathogenic to Man and   F
      Animals. General Problems.

Abs Jour   : Ref Zhur - Biologiya, No 5, 1959, No. 19550

Author   : Mel'nikov, V. N.; Gadeleva, A. D.
Inst   : Ufim Scientific-Research Institute of Vaccines
              and Sera
Title   : Concerning the Effect of Intervals Between
              Immunizations on the Titers of Agglutinizing
              Sera

Orig Pub   : Tr. Ufimsk. n.-i. in-ta vaktsin i syvorotok,
              1957, vyp 4, 75-79

Abstract   : No abstract given

Card 1/1

USSR / Microbiology. Anaerobic Bacilli.   F-6

Abs Jour: Ref Zhur-Biol., No 16, 1958, 72196.

Author   : Mel'nikov, V. N.; Krasil'nikova, T. V.
Inst   : Ufa Scientific-Research Institute of Vaccines and
           Sera.
Title   : Materials for the Study of Toxin Formations of
           Tetanus Bacteria. Report I. Formation of Tet-
           anus Toxin Under Different Conditions of Culti-
           vation of Tetanus Culture.

Orig Pub: Tr. Ufimsk. n.-i. in-ta vaktsin i syvorotok, 1957,
          vyp. 4, 175-180.

Abstract: No abstract.

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MEL'NIKOV, V.N.

Visibility of fishing equipment in water as related to its
catching ability. Trudy VNIRO no.47:68-112 '62.

(MIRA 18:4)

MYULLER, R.L.; DANILOV, A.V.; MARKOVA, T.P.; MEL'NIKOV, V.N.; NIKOL'SKIY,
      A.B.; REPINSKIY, S.M.

      Kinetics of solution of germanium in acid and basic solutions of
      hydrogen peroxide. Vest. LGU   15 no.4:80-87 '60. (MIRA 13:2)
                    (Germanium) (Hydrogen peroxide)

RASSOKHIN, N.G., kand.tekhn.nauk; MEL'NIKOV, V.N., inzh.

Corrosion resistance of zirconium alloys in the circulating water
medium. Teploenergetika 9 no.2:60-62 F '62.   (MIRA 15:2)

1. Moskovskiy energeticheskiy institut.
                            (Zirconium--Corrosion)

S/226/63/000/001/014/016
E193/E383

AUTHORS: Mel'nikov, V.N., Vesnina, V.A., Fridman, G.L.
and Yakovlev, V.V.

TITLE: New design of reducing furnaces for the fabrication
of hard alloys

PERIODICAL: Poroshkovaya metallurgiya, no. 1, 1963, 93 - 103

TEXT: The design and operation of the following new
equipment are described: 1) a 25 kW graphite-tube furnace
for carbon reduction of tungsten oxide. The maximum operating
temperature of the furnace is 1700 °C and its productive capacity
350 - 380 kg of tungsten powder per 24 hours. Charging of the
trays, conveying the trays through the furnace, discharging,
grinding the tungsten powder and returning empty trays to the
charging station are fully automatic; 2) a manually operated
40 kW nichrome-wound furnace for hydrogen reduction of tungsten
oxide. The furnace consists of 4 stainless-steel muffles, has a
maximum operating temperature of 950 °C and productive capacity
of 900 kg/24 hours; 3) a rotary nichrome-wound 36 kW furnace
for hydrogen reduction of tungsten oxide. The maximum operating
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New design of ....

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temperature of the furnace is 950 °C and its productive capacity 310 kg/24 hours; 4) a 22 kW rotary furnace of a more sophisticated design with the heating chamber formed by anular plates between two concentric tubes. The productive capacity of the furnace is 300 kg/24 hours; 5) hydrogen regenerating plant with a throughput of 50 m^3/h. There are 5 figures and 4 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut tverdykh splavov, Moskva (All-Union Scientific Research Institute of Hard Alloys, Moscow)

SUBMITTED: July 7, 1961

Card 2/2

MELNIKOV, V. N., Li-Chi-Min, NEFEDOV, V. D., RYUKHIN, Yu. A., TOROPOVA, M. A.   (USSR)

"Study of Isotope Effects In Beta-Decay of Natural Isotopes of Lead".

paper submitted for the Symposium on the Chemical Effects of Nuclear Transformation (IAEA) Prague, 24-27 Oct. 1960.

:/186/6./0°2/CC: 012/022
A057/A129

AUTHORS: Preobrazhenskiy, B.K.; Tsvelikhovskiy, V.P.; Mel'nikov, V.N.

TITLE: Ion-exchange separation of a group of elements. IV. Elements of the
              III. analytical group

PERIODICAL: Radiokhimiya, v. 2, no. 1, 1960, 73 - 77

TEXT: In the present paper : new method of ion-exchange separation for the
elements of the third analytical group is described. it can be applied in radio-
chemistry (to the preparation of elements with or without carrier), or analytical
chemistry. Many investigations were already made to separate some elements of
this group, but if separation from a more complex mixture has to be carried out,
none of these methods can be used without knowing the behavior of the other ele-
ments. In the present paper the following references are given: Ref. 1: D.I.
Ryabchikov and V.Ye. Bukhtiyarov, ZhAKh, 9, 196 (1954); Ref. 4: I.P. Ali .ri..,
Ye.P. Tsintsevich, Zav. lab., 21, 29 (1955); Ref. 6: A.K. Lavrukhina, DA. SSSR,
119, 56 (1958); Ref. 7: B. Lister, J. Chem. Soc., 3123 (1951); Ref. 8: .
Huffman, J. Am. Chem. Soc., 73, 4474 (1951); Ref. 12: O.V. A 'tshuler et al.,
ZhNKh, 3, 1192 (1958); Ref. 13: T.A. Belyavskaya et al., ZhAKh, 13, 668 (195.);

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Ion-exchange separation of a group of elements. IV.... Ω, $\frac{137}{00}$/002/0...

Ref. 15: D.I. Ryabchikov, and V.F. Osipova, ZhAKh, 11, 27 (1956). In applying
the present method the authors considered two principles: 1) Selection of a special selective complex-forming agent for each element, and 2) selection of conditions for the separation with varying concentrations of a single complex-forming agent. In order to avoid hydrolysis of some of the investigated elements, only mineral acids were used as elutriants. Hydrochloric acid solutions were used to study chloride complexes. It was observed, however, that data given by K. Kraus and F. Nelson have to be checked. The present experiments were carried out with the КУ-2 (KU-2) sulfo-styrene cation exchange resin (6% divinylbenzene content, capacity 4.7 mg equiv/g) and the strongly basic AV-17 (AV-17) anion-exchange resin, or Dowex-1. The resins were used in H^+ or Cl^- form, and d = 2 mm, 1 - 70 - 100 mm columns were used. Flow rates of about 1 drop/min were maintained and the separation was controlled by means of radioactive isotopes or spot tests. Some details concerning the technique are described in previous papers [Ref. 18: ZhNKh, 3, 119 (1958); Ref. 19: ZhNKh, 2, 1164 (1957); Ref. 20: Radiokhimiya, 2, 1, 68 (1960)]. The first experiments demonstrated that the elements investigated cannot be separated using only one ion-exchange resin, but cation- and anion-exchange resins must be used. The following method was developed by the present authors: the concentrated hydrochloric acid solution containing the mixture of

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Ion-exchange separation of a group of elements. IV.... S/186/60/002/001/012/022
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all the elements is passed through the column with the anion-exchange resin. The elements which form anionic complexes are adsorbed, and thus two sub-groups are separated. The elements adsorbed on the anion-exchange resin were removed selectively by varying the HCl concentration (corresponding to the constant of the anion complex). The elements which are not adsorbed by the anion-exchange resin were passed into the column with the cation-exchange resin and were then removed selectively. The conditions for the partition of the elements are presented in Figures 1, 2 and 3. If rare earths have not been removed preliminarily, they can be washed out quickly with 5 N HNO_3 after elution of aluminum and are separated by special methods (Refs. 18, 19). Fe and Ga are removed from the anion-exchange resin together and can be separated later on the cation-exchange resin according to the greater tendency of iron to form neutral complexes (like $FeCl_3$) or the less dissociated $HFeCl_4$ (compared to $HGeCl_4$). Ni^{2+} and Tl^+ are removed almost together. Oxidizing the latter by saturating the elutriant with chlorine, Tl^+ can be removed before Ni^{2+}. Thorium must be removed by sulfuric acid from the cation-exchange resin. Elements separated on the cation-exchange resin do not form anionic complexes in HCl solutions, even here separation occurs due to selective formation of mainly neutral complexes. Thus Ni and Tl can be removed from the cation-exchange resin with 1 M HCl solution, but not with 1 M HNO_3 solu-

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Ion-exchange separation of a group of elements.   IV....   S/186/60/002/001/012/022
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tion, i.e., the anion of the acid is important, indicating that complex formation occurs. The adsorption of several elements on the cation-exchange resin stops already in 2.5 M HCl solution and they can be removed although they do not form anionic complexes. This indicates formation of neutral complexes, for instance of the type $[MeCl_x]^0$, for the elements Cr^{3+}, V^{4+}, Ni^{2+} and Tl^+. Cr^{3+} forms a stable neutral complex. Thus chromium can be easily separated from all other elements. This can be applied to serial analyses of metals, etc. The three references to recent English-language publications read as follows: Ref. 3: K. Kraus et al., J. Phys. Chem., 58, 11 (1954); Ref. 5: K.A. Kraus, G. Moore, J. Am. Chem. Soc., 75, 1460 (1953); Ref. 9: J. Benedict et al., J. Am. Chem. Soc., 76, 2036 (1954). There are 3 figures, 1 table and 19 references: 10 Soviet-bloc and 9 non-Soviet-bloc.

Figure 1: Separation of the elements of the III group, adsorbed by the anion-exchange resin from concentrated HCl (anion-exchange resin of AV-17 type or Dowex-1). ① free volume; ② cation.

free volumes of the column

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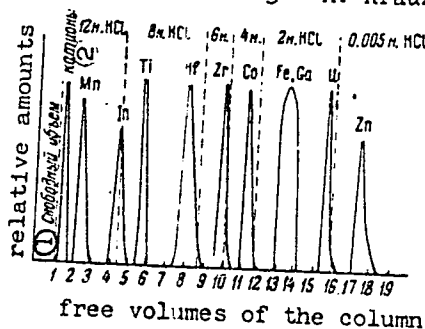
S/186/61/003/001/020/020
A051/A129

AUTHORS: Grachev, S.A., Mel'nikov, V.N., Ryukhin, Yu.A., Toropova, M.A.

TITLE: Separation of Cd^{109} without a carrier from a cyclotron target

PERIODICAL: Radiokhimiya, v 3, no 1, 1961, 116-118

TEXT: The radioactive isotope Cd^{109} is formed when irradiating silver in a cyclotron according to the reaction: $Ag^{109}(d, 2n) Cd^{109}$. The Cd^{109} decays by K-capture with a half-life of 470 days. The energy of the monochromatic gamma-emission $E = 87$ kev. In addition to Cd^{109} the long-lived isotope of silver Ag^{110m} (T=270 days) is also formed according to the reaction $Ag^{109}(d,p)Ag^{110m}$. The problem of separating Cd^{109} without a carrier is reduced to the separation of micro-quantities of Cd from larger quantities of silver and copper. Reference is made to certain other methods of Cd separation from silver, such as the thiocyanate method (Ref 1), the ditison method (Refs 2-4), the diethylcarbamate method (Ref 5), and it is pointed out that all these methods are unsuitable for the separation of Cd^{109} without a

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Separation of Cd^{109} without a carrier ...

carrier in the presence of very large quantities of copper and silver. The authors recommend the following method of Cd^{109} separation without a carrier: The target on which the silver was placed was submerged into concentrated nitric acid and the silver layer was dissolved. After washing the target with distilled water, the combin . solutions (nitric acid and aqueous) were transferred to a triple-mouth flask (Fig 1). The solution was heated. The silver iodide and copper semi-iodide were precipitated by adding a 10% solution of HI, while mixing. The solution was separated from the precipitate through a porous quartzite filter with a pore size of 20-35   into a separating funnel. The precipitate was washed 2-3 times with a 1% solution of HI, after which the solution was poured into a quartzite container through the lower tap of the separating funnel and was evaporated until dry. The precipitate was processed twice with distilled concentrated HCl with subsequent evaporating until dry, and was dissolved in 10 ml of 2n HCl. The further purification of Cd^{109} from copper and traces of silver was conducted by using an ion-exchange column. The column with a diameter of 10 mm and a length of 70 mm was submerged in   -17 (AB-17) resin with a grain size of 50-100 . The resin was washed eliminating iron and transferred to a Cl-con-

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Separation of Cd^{109} without a carrier ...

tainer. The initial solution was passed through a column at a rate of 0.15
ml per minute. Then the column was rinsed with 70-80 ml of 2 n HCl, whereby
traces of copper were removed. Cd^{109} was evaporated to the required volume.
The radiochemical purity of the obtained sample was checked by taking the
gamma-spectrum using a scintillation gamma-spectrometer with automatic re-
gistering of the gamma spectra. A NaI crystal was used as the scintillator,
having a counting efficiency of the gamma quanta with a 100 kev energy
equalling 18%. Fig 2 shows the gamma-spectrum of the initial nitric acid
solution containing Cd^{109} and Ag^{110m}. The 87 kev energy peaks belong to
Cd^{109}, and the 447, 883, 936 and 1382 kev peaks belong to Ag^{110m}. Fig 3 is
the gamma-spectrum of the AgI precipitate. The gamma-spectrum of the Cd^{109}
sample formed without a carrier is shown in Fig 4. The presence of the only
line with an energy of 87 kev in the spectrum indicates the radiochemical
purity of the Cd^{109} sample obtained. The integral change of the activity of
all the gamma-lines with an energy over 100 kev proved that the radioactive
contaminations of the sample are much below 0.1%. There are 3 graphs, 1
diagram and 7 references: 3 Soviet-bloc, 4 non-Soviet-bloc.

Card 3/5

MELNIKOV, V. N.

GALANIN, A. D., GRASHIN, A. F., FERROV, V. N., and POPOVA, A. P.

"The Effects of $\pi-\pi$ interaction in $\pi+\pi\to N+\bar{N}$, $\gamma\to\pi+\pi$, $N\cdot N\to\gamma$ and $N+N\to N+N$ Amplitudes"

report presented at the Intl. Conference on High Energy Physics, Geneva.
4-11 July 1962

Inst. of Theoretical and Experimental Physics, Moscow, USSR

37890
S/056/62/042/005/041/050
B108/B138

AUTHORS: Grashin, A. F., Mel'nikov, V. N.

TITLE: π - π interaction in nucleon electromagnetic form factors

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42,
               no. 5, 1962, 1404-1409

TEXT: The isovectorial form factors of the nucleon with consideration of
π - π interaction as calculated by W. R. Frazer and J. R. Fulco (Phys.
Rev., 117, 1609, 1960) involve some inaccuracies. For this reason the
present authors calculated these electromagnetic form factors in two-meson
approximation, using the results of A. D. Galanin and A. F. Grashin
(ZhETF, 41, 633, 1961) for the π + π ⟶ N + N̄ amplitudes. Rescattering
corrections are ignored. Use was made of an expression for π - π
interaction that is more general than the Breit-Wigner model:

$$\delta_1(t) = \text{arctg}\left[\frac{\sqrt{x}Q(x)}{X(x)}\right], \quad \varphi_1(t) = \frac{\prod_{k=1}^{n}(x-x_k)}{X(x) + Q(x)\sqrt{-x}}, \tag{9}$$

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$\pi - \pi$ interaction in nucleon ...

This led to the absorption part of the nucleon form factor:

$$\operatorname{Im} F_1^V (t) = \frac{1}{2} e^2 g^2 \mid \varphi_1 (t) \mid^2 \frac{x \sqrt{x/(1+x)}}{\prod_{k=1}^{n} \mid x - x_k \mid^2} \times \qquad (10),$$

$$\times \{ X (x) - L_n (x) \} \left\{ X (x) \frac{1+2x}{x} - L_{n+1} (x) \right\};$$

(11), where

$$\operatorname{Im} F_2^V (t) = \frac{1}{8} \frac{eg^2}{1.85} \mid \varphi_1 (t) \mid^2 \frac{x \sqrt{x/(1+x)}}{\prod_{k=1}^{n} \mid x - x_k \mid^2} \times$$

$$\times \{ X (x) - L_n (x) \} \left\{ X (x) \frac{\pi}{\sqrt{x}} - M_{n+1} (x) - Q (x) \ln x \right\}$$

$X(x)$ and $Q(x)$ are arbitrary polynomials; the x_k are the roots of the equation $X(x) + Q(x) \sqrt{-x} = 0$, $\operatorname{Re} \sqrt{-x} \geqslant 0$; $g^2 = 14.5$; $\varepsilon = \mu/m = 0.15$;

Card 2/3

π - π interaction in nucleon ...   S/056/62/042/005/041/050
                                            B108/B138

m and μ are the nucleon and pion masses, respectively. Results
consistent with experiment can be obtained for the case of kinematic
resonance at an energy of about 750 Mev (effect of the ϱ-meson). There
are 3 figures.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki
                Akademii nauk SSSR (Institute of Theoretical and Experimen-
                tal Physics of the Academy of Sciences USSR)

SUBMITTED: January 6, 1962

Card 3/3

S/056/62/043/006/047/067
B111/B102

AUTHORS: Galanin, A. D., Grashin, A. F., Mel'nikov, V. N.,
             Nikitin, Yu. P.

TITLE: Nucleon-nucleon scattering in two-meson approximation with
             consideration of the ππ-interaction

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
             no. 6 (12), 1962, 2245 - 2254

TEXT: The explicit calculation of the two-meson contribution to the
nucleon-nucleon scattering amplitude has been possible so far only for
large values of the orbital angular momentum $l \gg 1$. The accuracy obtained
was $(\sqrt{1 + p^2/\mu^2})/(1 + 1)$, where μ is the pion-mass and p is the nucleon
momentum in the c. m. s. In order to achieve more accurate results, the
absorptive part of the NN-amplitude must be calculated by using the
πN-amplitude in the nonphysical domain. In the present work this calcula-
tion given by

$$\lambda_l(x) = e^{i\delta_l(x)} \sin \delta_l(x) = Q^{(l)}(x)\sqrt{x}/[X^{(l)}(x) - iQ^{(l)}(x)\sqrt{x}];$$

$$\sqrt{x}\,\mathrm{ctg}\,\delta_l(x) = X^{(l)}(x)/Q^{(l)}(x); \quad l = 0\,(S), \ 1\,(P), \ 2\,(D).$$

(3)

Card 1/3

Nucleon-nucleon scattering in ...

was performed for $4\mu^2 < t < 4m\mu$ (t is the momentum transferred and m is the nucleon mass) using the πN-amplitude obtained by A. D. Galanin and A. F. Grashin (ZhETF, 41, 633, 1961). The $\pi\pi$-scattering having the isotopic spins I = 0 for even l and I = 1 for odd l was taken into account. $X^{(1)}(x)$, $Q^{(1)}(x)$ are arbitrary polynomials in x, x being the square of the three-dimensional meson momentum. The accuracy achieved is found to be $\sim t/4m$ and $\sim p^2/m^2$ in nonrelativistic approximation. The calculations showed that the NN-amplitude depends only weakly on a $\pi\pi$-amplitude which is free from resonance. In practice, it is the S-amplitude of the $\pi\pi$-scattering only (isotopic spin I=0) that affects the central forces between the nucleons, but also in this case the NN-scattering experiments fail to give any insight into the parameters of the $\pi\pi$-amplitude. It is only the $\pi\pi$-amplitudes with kinematic resonances vanishing near the point of resonance that make significant contributions to the NN-amplitude, in particular to the spin angular momentum forces and tensor forces. In the simplest case of a kinematic P-resonance at 750 Mev (π-meson) it is impossible to make the results from the two-meson approximation of the electromagnetic nucleon form factors and from the elastic

.Card 2/3

Nucleon-nucleon scattering in ...

S/056/62/043/006/047/067
B111/B102

NN-scattering amplitude consistent with the experiment. Finally, the present results are compared with previous data. There are 1 figure and 2 tables.

SUBMITTED: July 5, 1962

Card 3/3

RASSOKHIN, N.G., kand. tekhn. nauk; ATTENSHTADT, K., inzh.; MEL'NIKOV,
V.N., inzh.

Experimental study of heat emission during the boiling of water
in circular channels. Trudy MEI no.63:51-58 '65.

(MIRA 18:12)

GERASIMOV, V.V.; [illegible], [illegible]

[Special reactors of nuclear materials] materialy spetsial'nye dlya diadernykh i atomnykh reaktornye materialy. Moskva, Gos. nauk. energ. izd-vo, [illegible]
[illegible] p.   (MIRA [illegible])

BASSOKHIN, N. G., kand. tekhn. nauk; SHVETSOV, R. S., aspirant; MEL'NIKOV,
Li... inzh.

    Experimental study of hydraulic resistance during the flow of
a vapor and water mixture in circular channels with internal
heat emitting surface. Trudy MEI no.63:73-78 '65.
                               (MIRA 18:12

0521B
SOV/142-2-3-15/21

9(5,0), 24(1)

AUTHOR: Sokolov, Ye.S., Candidate of Technical Sciences

TITLE: A Scientific Conference on the Application of Ultrasound in the Investigation of Matter

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, 1959, Vol 2, Nr 3, p 380 (USSR)

ABSTRACT: From February 10-14, 1959, the Seventh Scientific Conference on the Application of Ultrasound for the Investigation of Matter was adhered in Moscow at the Moskovskiy Oblast'noy pedagogicheskiy institut, imeni N.K. Krupskoy (Moscow Oblast Pedagogical Institute, imeni N.K. Krupskaya). About 500 was instructors from Moscow, Leningrad, Krasnodar, Kazan, Stalingrad and scientists from the German Democratic Republic and Poland participated in the conference. More than 80 papers were read at the conference. The following sections were organized at this conference: molecular acoustics, industrial application of ultrasound research methods, propagation of ultrasound in solid bodies, demonstration of acoustical phenomena in schools and vuzes. At the first plenary session, the paper of V.F. Nozdrev was read "Physical Principles of Technical..."

Card 1/3

...lological Application of Low-Amplitude Molecular Acoustics". B.B. Kudryavtsev read his paper "The Application of Ultrasound in Industry". The following papers were read at the plenary session: A.S. Predvoditelev "The Sound Wave Dispersion in Rarefied Gases", D. Rothard, German Democratic Republic, "Ultrasonic Investigation of Silica Gel and Its Derivatives", M. Fva, Poland, "the Application of the Molecular Kinematic Theory of Gases to the Problem of Waves with a Limited Amplitude", I.G. Mikhailov, "The Theory of Rosehall-type Solits", and a paper of Professor F. Eucher, Poland. Research in the field of ultrasound wave propagation in liquids was the subject of the papers of B.B. Kudryavtsev, S.A. Bel' yaga, L.D. Belinskaya, O.A. Karastina, V.N. Zakharanova, V.D. Kasparyants, N.I. Koshkin and V.F. Yakovlev was devoted to the consideration of problems in the development of molecular consideration of the dynamic equation of the state of strongly viscous liquids. The ultrasonic oscillations were subject of the reports of N.M. Dyatrov, A.N. Trofimov, A.I.

Card 2/3

Ryazanov, L.D. Pirshnikov, L.P. Lependin, P.L. Lakshin, I.L. Cherchenko and others. The report of L.A. Ol'shanskiy, A.V. Uritskiy, and others dealt with the application of ultrasound in welding. In the section of acoustic research methods, the papers of the following authors were read: D.I. Kal'yanov, V.F. Yakovlev, A.D. Bipir and V. Koralova. These reports dealt with pulse measuring methods of velocity and absorption of ultrasound. The propagation of ultrasound in solid bodies was the subject of the reports of L.O. Korolev, V.S. Chertashin, L.A. Yakovlev, A.I. Demkin, A.K. Matveyev and others. In the section dealing with acoustical demonstration at schools and vuzes, the following reports were delivered: M.A. Grabovskiy and V.A. Topolov, "Experimental Demonstration of Ultrasound", I.M. Melikov, "An Acoustic Radiometer for Demonstration Purposes". This annual conference convened at MOPI ahead the investigation of applying ultrasound to the number of subjects interest in problem of applying ultrasound and the number of subjects is rising steadily.

Card 3/3

SUBMITTED: April 13, 1959

MEL'NIKOV, V. P.

KARPUKHIN, V.V.; ZAYCHENKO, G.N.; ZIL'BERMAN, A.S.; POPLAVSKIY, V.R.; SOKOLOV, B.A.; NIKITIN, N.G.; DVORYANKIN, M.M.; MEL'NIKOV, V.P.; OL'CHEV, P.F.; BABCHENKO, V.M.

Two-zonal electric furnace for the caking of solid alloys.
Prom. energ. 14 no.1:40-41 Ja '59.   (MIRA 12:1)
                                (Electric furnaces)

MEL'NIKOV, V.P.

About the article "Flanged joints made of laminated wood plastics";
letter to the editor. Bum.prom.31 no.3:26 Mr '56.   (MLRA 9:7)

1.Glavnyy mekhanik Glavtsllyulozy.
              (Laminated plastics)

MEL'NIKOV, V.P., inzh.; SLATIN, V.A., inzh.; NOR-AREVYAN, K.L., inzh.; IPATOV, A.I., inzh.; SHKURO, L.A., inzh.; TYUTYUNNIKOV, B.D., inzh.

Let us give high-quality equipment to the reinforced-concrete-products plants! Transp. stroi. 12 no.3:30-33 Mr '62.

(MIRA 16:11)

ALEKSEYEV, Ivan Mikhaylovich; MEL'NIKOV, Vladimir Petrovich;
    SHVYDCHENKO, L.I., red.

    [Manual for rural builders] Spravochnik sel'skogo stroitelia.
    Rostov-na-Donu, Rostovskoe knizhnoe izd-vo, 1959. 508 p.
                                                 (MIRA 17:4)

L 9789-66   EWT(m)/T   DJ

ACC NR: AP5028526   SOURCE CODE: UR/0286/65/000/020/0117/0117

AUTHORS: Bocherov, A. A.; Kobelev, V. V.; Nikanorov, Ye. I.; Mel'nikov, V. P.

ORG: none

TITLE: [Pneumatically or hydraulically driven manipulator]   Class 49, No. 175803

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1965, 117

TOPIC TAGS: pneumatic device, hydraulic device, material handling

ABSTRACT: This Author Certificate presents a pneumatically or hydraulically
driven manipulator which includes a gripping head with a clamping device (see Fig.
1). To decrease the drive operating range while retaining sufficient clamping
force, the drive of the clamping jaws contains a floating power cylinder one end
of which is hinged to one pair of a four-bar linkage. The moving part of the
power cylinder is connected to the other pair of the four-bar linkage which in turn

Card 1/2   UDC: 621.733.5.077
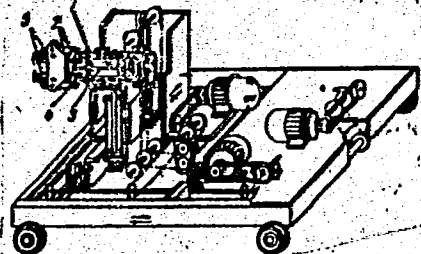
L 9789-66

ACC NR: AP5028526

Fig. 1. 1 - Floating cylinder;
2 - 2 bars of four-bar linkage;
3 - rod; 4 - other 2 bars of four-
bar linkage; 5 - clamping jaws.

is connected to the jaws of the clamping head. Orig. art. has: 1 figure.

SUB CODE: 13/   SUBM DATE: 28Dec62

Card 2/2

MEL'NIKOV, V.S.

Reducing trade expenses in selling manufactured goods. Izv. KPI
(MIRA 11:3)
25:84-94 '57.
(Russia--Manufactures)

MEL'NIKOV, V.S.

Resources for reducing trade expenses in selling manufactured goods.
Izv. KPI 25:159-183 '57.   (MIRA 11:3)
          (Russia--Manufactures)

MEL'NIKCV, V.S.

        Reinforce control over the observance of standards.   Der. prom.
        12   no.1:14   Ja   '63.   (MIRA 16:5)

        1. TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy
        obrabotki drevesiny.   (Lumber—Standards)

TEPLOV, Nikolay Leont'yevich; MEL'NIKOV, V.S., retsenzent;
    YAKOBSON, A.Kh., red.

    [Interference rejection of discrete information transmit-
    ting systems] Pomekhoustoichivost' sistem peredachi diskret-
    noi informatsii. Moskva, Izd-vo "Sviaz'" 1964. 358 p.
                                        (MIRA 17:8)

MEL'NIKOV, V. S.

PA 20/49T107

USSR/Radio Receivers   Oct 48
    Vacuum Tubes - Diode

"Measuring Sensitivity of Receivers With the Aid of
a Noise Diode Tube," V. S. Mel'nikov, Engr, 3 pp

"Vest Svyazi - Elektrosvyaz'" No 10

Treats subject under the following: sensitivity of
a receiver, measurement of noise sensitivity of a
receiver, changing h to microvolts, circuits and
construction of noise diode, system of output
measurement, and method of taking readings. In-
cludes three diagrams.

20/49T107

3786.   Short report on oscurations on short-wave f.m. telephony reception. MELNIKOV, V. S. AND NEDELIAEV, B. A. *Radiotekhnika*, 4, 52–4 (May–June, 1949) *in Russian.*—The equipment used for f.m. tests on λ = 36 m over short and long distances up to 3 000 km (max. deviation 2 500 c/s) is described briefly, and the methods of transmission quality assessment are indicated. The results confirm the unsuitability of f.m. for long-range work.   A. L.

METALLURGICAL LITERATURE CLASSIFICATION

MEL'NIKOV, V. S. and NIKOLAYEV, B. A.

"Brief Report on Results of Observations of Short-Wave FM Telephone Reception," Radiotekhnika, No 3, 1949.

Central Scientific Research Institute of Communications, Ministry of Communications (TsNIIS)

MEL'NIKOV, V. S.

"Frequency Radio Telegraphy". One of a series of Telecommunications lectures given by experts in the scientific research institutes and educational institutes.

SO: Vest. Svyazi, p 24, No. 6, 1952.

MELNIKOV, V.

"Frequency wireless telegraphy."

So. Radio, Vol. 5, p . 39, 1952

MEL'NIKOV, V.

Telegraph, Wireless

Radiotelegraphy. Radio No. 5, 1952

MEL'NIKOV, V.

"Frequency radio-telegraphy," Radio, No. 5, Publ. of the Min. of Communication, 1952.

MEL'NIKOV, V.S.

Calculation of the antenna coupling of the shortwave receiver for
main-line radio communication. Elektrosviaz' 10 no.3:5-12 Mr '56.
(Radio--Antennas)   (MLRA 9:7)

MEL'NIKOV, V. (Moskva)

Lead outs from television antennas. Radio no.10:45 O '57.

(MIRA 10:10)

(Television--Antennas)

MEL'NIKOV, V.S.

4147.   EVALUATION OF AN ENERGY-ABSORBING LINE.
V.S.Mel'nikov.
Radiotekhnika, Vol. 12, No. 1, 26-30 (1957). In Russian.
    An analysis of a line designed to absorb energy at a constant
rate per unit length.   W.Bezdel

AUTHOR   MEL'NIKOV V.S.,Ordinary Member of Radio Society.   108-5-5/13
TITLE   Peculiarities of the Operation of Coupled Long Lines in the Case of
            Aperiodic Coupling.
            (Osobennosti raboty svyazannykh dlinnykh liniy pri induktivnoy raspredel-
            ennoy svyazi - Russian)

PERIODICAL Radiotekhnika, 1957, Vol 12, Nr 5, pp 37 - 41 (U.S.S.R.)

ABSTRACT   The special case is investigated where there is only one inductive coupling
            between two electric lines and where capacity coupling is lacking. This can
            be attained if there is an electrostatic screen between the two lines,The
            system of differential equations is derived and then the wpecific case with
            two lines of infinite length is investigated. The coupling between the two
            is taken to be weak. Equations are obtained from which the following con-
            clusions may be drawn on the condition that there must be only one feed,
            namely at the beginning of one line, and that there must be no reflections.
            1.) The voltages at random points of the coupled lines, which have the same
            distance from the outset, are moved in quadrature, their amount, however,
            changes along the line, passes from one line to another and vice versa.
            2.) The points on any line consist of two components: one basic component,
            which coincides with the line voltage according to its phase and its charac-
            ter of changing along the line, and an additional component, which coinci-
            des with the voltage of the neighbouring line as regards the phase and the
            character of the change. This latter component forms a certain reactive po-

Card 1/2

Peculiarities of the Operation of Coupled Long Lines in the 105-5-5/53
Case of Aperiodic Coupling.

wer in the two coupled lines on which occasion the total reactive power
in the two lines does not change with the length of the lines. Then the
loads at the ends of the lines are determined for developing a working pro-
cess with travelling waves in the case of a finite line length.
(1 illustration)

ASSOCIATION   Not Given.
PRESENTED BY
SUBMITTED   lo.lo.1956
AVAILABLE   Library of Congress
Card 2/2