L 9965-65
ACCESSION NR: AT4046872

ENCLOSURE: 01

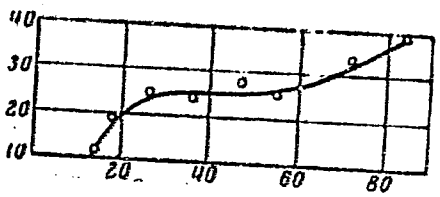

Fig. 1. Relationship between yield point of samples which have undergone phase hardening and the degree of transformation.

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L 9965-65
ACCESSION NR: AT4046872

ENCLOSURE: 02

0

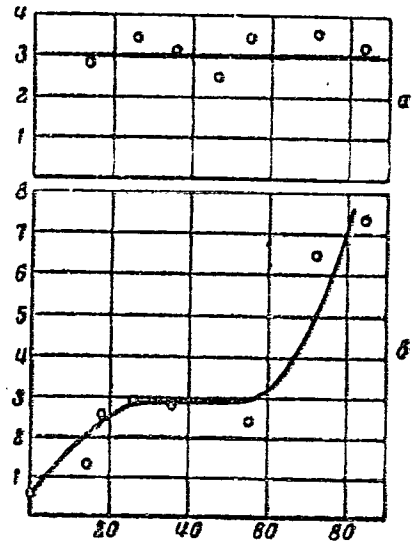

Fig. 2. Disorientation of blocks by the grain depending on the degree of martensitic transformation:

a - for martensite;
b - for residual austenite

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ACCESSION NR: AP4010070 S/0129/64/000/001/0024/0027

AUTHORS: Gorbach, V.G.; Maly*shev, K.A.; Gass, A.V.; Ustyugov, P.A.

TITLE: Effect of high temperature nonrecrystallizing work hardening on the mechanical properties of precipitation hardened steels.

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 1, 1964, 24-27.

TOPIC TAGS: precipitation hardened steel, austenitic steel, work hardening, aging, high temperature work hardening, vanadium containing steel, brittleness, recrystallization, strength, impact strength

ABSTRACT: A study of austenitic steels (containing Cr-Ni-Mn, Cr-Ni-Mn-V and Cr-Mn-V) showed that high temperature work hardening affected their properties favorably after aging, increasing strength and impact strength. The high temperature work hardening decreased the transcrystalline brittleness developed by precipitation hardening. The partial growth of recrystallization by the high temperature work hardening does not eliminate the possibility of getting

Card 1/2

ACCESSION NR: AP4010070

higher mechanical properties (in comparison to properties of steels not subject to high temperature work hardening) by subsequent precipitation hardening. Austenitic steel containing 1.5% vanadium, when subjected to a combination of high temperature work hardening and aging has high mechanical properties even by partial recrystallization during the high temperature deformation process. Orig. art. has: 2 tables and 4 figures.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 07Feb64 ENCL: 00

SUB CODE: ML NO REF SOV: 002 OTHER: 000

Card 2/2

L 17618-65 EWT(m)/EWA(d)/EWP(t)/EWP(b) MJW/JD/WB/JXT(CZ)

ACCESSION NR: AP4044119 S/0148/64/000/008/0123/0128

AUTHOR: Mints, R. I.; Gorbach, V. G.; Eysmondt, T. D.

TITLE: Kinetics of martensite formation in chromium-nickel and chromium-manganese steels under the effect of deformation

SOURCE: IVUZ. Chernaya metallurgiya, no. 8, 1964, 123-128

TOPIC TAGS: chromium nickel austenitic steel, 44Kh10g7* steel cavitation resistance, 70Kh7N8 steel cavitation resistance, chromium manganese austenitic steel, deformation induced martensitic transformation, steel cavitation resistance

ABSTRACT: The study of martensitic transformation in 70Kh7N8 and 44Kh10g7* austenitic steels has shown that while both steel types have the same M_s temperature, -20 to -60C, and form the same amount of martensite on cooling, they differ sharply in the intensity and volume of martensitic transformation under the effect of deformation. The intensity of martensite formation and the quantity of the martensite is much higher and the transformation temperature range is

Card 1/3 * Should be 44Kh10G7

wider in chromium-manganese steel than in chromium-nickel steel since the M_d point of the formula, i.e., 180-200C, is higher than that of the latter, i.e., 140C. With an increasing reduction and a decreasing deformation temperature, the quantity of martensite found in chromium-manganese steel increases much more rapidly than in chromium-nickel steel. Rolled at 200C both steels have the same hardness, but the hardness of chromium-manganese steel increases more rapidly with a decreasing temperature of deformation than the hardness of chromium-nickel steel. This can be explained by lower stability of chromium-manganese austenite in the process of plastic deformation. Under conditions of cavitation when the plastic deformation occurs in [illegible] elements, a continuous martensite layer may be formed in chromium-manganese steel, while in chromium-nickel steel a maximum deformation yields only an insignificant quantity of martensite. Orig. art. has: 6 figures.

ASSOCIATION: none

L 17618-65
ACCESSION NR: AP4044119

SUBMITTED: 28May63 ENCL: 00

SUB CODE: MM NO REF SOV: 003 OTHER: 001

Card 3/3

L 8857-66 EWT(m)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(h)/EWA(c) JD
ACC NR: AP5026744 SOURCE CODE: UR/0286/65/000/017/0020/0020

INVENTOR: Malyshev, K. A.; Borodina, N. A.; Gorbach, V. G.
ORG: none
TITLE: Method of heat treatment of austenitic alloys. Class 18, No. 174203 [Announced by the Ural Branch of the Institute of Metal Physics, AN SSSR (Ural'skiy filial instituta fiziki metallov AN SSSR)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 20

TOPIC TAGS: austenitic steel, metalaging, alloy, metal heat treatment, solid mechanical property

ABSTRACT: This Author Certificate introduces a method of heat treatment of austenitic alloys which combines direct gamma to alpha and reverse alpha to gamma transformations and produces strain-hardened austenite. Improved mechanical properties are obtained by subsequent aging of strain-hardened austenite while preserving the austenitic structure of the alloys.

[AZ]

SUB CODE: 13, 11 / SUBM DATE: 01Feb64/ ATD PRESS: 4152

BVK
Card 1/1 UDC: 621.785.797

ACCESSION NR: AP4017355 S/0126/64/017/002/0229/0233

AUTHOR: Gorbach, V. G.; Maly*shev, K. A.

TITLE: Strengthening high-carbon austenite alloys by phase-transformation-induced strain-hardening

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 2, 1964, 229-233

TOPIC TAGS: austenitic alloy, high carbon steel, strengthening, strain hardening, phase transformation, iron alloy, steel structure

ABSTRACT: Strain-hardening occurring during a $\gamma \rightarrow \alpha \rightarrow \gamma$ transformation was examined as a way of strengthening alloys of Fe with Ni (0.1—21.75%), Mn(0.45—6.45%, Cr(0.54—14.71%), Si(0.28—2.21%), and C(0.35—0.88%) in a series of tests at -20 to -160 C. A high degree of strengthening and preservation of the austenitic structure depend on the rate of the temperature rise in the alloy during the transformation. No strengthening occurs below a definite temperature-rise rate, which is specified for each particular alloy. Prolonged holding in the austenitic state at optimum temperatures (700-730 C) in an attempt to dissolve the carbides liberated by martensite during annealing did not succeed. It is concluded that a high carbon content, in addition to its marked strengthening effect, may permit reduced use of scarce metals (Ni) and make the M_s point less dependent on the chemical composition. Orig. art.has: 2 graphs and 1 table.

Card 1/2

ACCESSION NR: AP4017355

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Metallurgical Physics AN SSSR)

SUBMITTED: 21May63 DATE ACQ: 18Mar64 ENCL: 00

SUB CODE: ML NO REF SOV: 007 OTHER: 002

Card 2/2

ACCESSION NR: AP4039598 S/0126/64/017/005/0714/0718

AUTHOR: Zaytsev, V. I.; Gorbach, V. G.

TITLE: Heat-induced change in the structure and strength characteristics of an alloy deformed in martensitic state

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 5, 1964, 714-718

TOPIC TAGS: iron nickel alloy, alloy transformation, martensitic transformation, reversed transformation, transformation induced strengthening, work hardened martensite, transformed austenite, austenite property

ABSTRACT: The structure and properties of a low-carbon iron-nickel alloy (0.04% C, 0.38% Mn, 0.33% Si, 28.33% Ni) were investigated after deformation in the martensitic state and subsequent transformation of martensite to austenite. Alloy specimens containing 90% martensite and 10% austenite were rolled at liquid nitrogen temperature or at room temperature. Deformation with a reduction of 40%

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at -196C transformed all the austenite to martensite and raised the yield strength by 20—25% and the microhardness from 210 kg/mm^2 to 265 kg/mm^2. No further increase in the yield strength was obtained after reductions up to 80%. On heating, the deformed martensite begins to transform at a higher temperature than undeformed martensite (see Fig. 1 of the Enclosure). However, the austenite from deformed martensite softens more rapidly than that transformed from undeformed martensite specimens; at temperatures above 600C, the yield strength of the former is lower than that of the latter (see Fig. 2). This is caused by recrystallization, as analysis of the x-ray diffraction patterns indicated. To eliminate the effect of recrystallization, the alloy in the martensitic state was rolled at 150C with a reduction of 25%. This treatment increased the microhardness of austenite by 30 kg/mm^2, but the austenite proved to be equally unstable, as in previous experiments. Orig. art. has: 5 figures.

ASSOCIATION: Institut neorganicheskoy i fizicheskoy khimii AN KirgSSR (Institute of Inorganic and Physical Chemistry, AN KirgSSR); Institut fiziki metallov AN SSSR (Insitute of Physics of Metals, AN SSSR)

L 6261-65 EWT(m)/T/EWP(t)/EWP(z)/EWP(b)/EWA(c) IJP(c) JD/HW

[illegible] 0114/0119

[illegible]v, Ye. A., Gorbach, V. G.

[illegible] x-ray diffraction study [illegible] during direct and reverse martensitic transformation

Source: Fizika metallov i metallovedeniye, v. 20, no. 1, 1965, 114-119

TOPIC TAGS: x ray diffraction analysis, metallography, austenite transformation, martensitic transformation, iron nickel alloy

[illegible] diffraction is used to supplement [illegible] graphic analysis. X-ray diffraction microscopy [illegible] nealed austenite grains is characterized by a small number of fragments of various [illegible] the orientation of which varies very little. As martensite begins to form [illegible] transformation, the austenite [illegible] oriented and the [illegible] intensity increases. After the reverse [illegible] the gamma-phase [illegible] of the fragments which [illegible]

Card 1/2

L 62917-65

ACCESSION NR: AP5018861

[illegible] but retain the sizes and orientations they assumed during the gamma-[illegible]formation. Orig. art. has: 4 figures, 1 formula.

[illegible] Kirgizskiy gosuniversitet, (Kirghiz State University, Faculty [illegible]

SUBMITTED: 07Jul64 ENCL: 00 SUB CODE: MM

[illegible] 012 OTHER: 009

L 8840-66 EWT(m)/EWA(d)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) IJP(c) JD/HW/MJW(CL)
ACC NR: AP5027149 UR/0126/65/020/004/0608/0613

AUTHOR: Zaytsev, V. I.; Gorbach, V. G.

ORG: Institute of Inorganic and Physical Chemistry, AN KirgSSR (Institut neorganicheskoy i fizicheskoy khimii AN KirgSSR); Institute for the Physics of Metals, AN SSSR (Institut fiziki metallov AN SSSR)

TITLE: Effect of initial structure of martensite on strengthening of austenite by phase cold working

SOURCE: Fizika metallov i metallovedeniye, v.20, no.4, 1965, 608-613

TOPIC TAGS: martensite steel, austenite steel, work hardening, phase transition, COLD WORKING

ABSTRACT: The article considers the effect of the initial structure of martensite on the austenitic structure after martensite transition from the alpha to the gamma phase. The investigation was carried out on an alloy of iron and nickel, containing 28% nickel and 0.04% carbon, in which the forward and reverse transitions from the gamma phase to the alpha phase and back take place by the martensite mechanism. On cooling in liquid nitrogen, 95-90% martensite can be obtained in the alloy. Results of investigations of the fine structure

Card 1/2 UDC: 539.4.015:669.15'24

L 8840-66

ACC NR: AP5027149 4

of the alpha and gamma phases are shown graphically. From the experimental results the following conclusions are drawn. In the transition from the alpha to the gamma phase, austenite inherits the block structure, high density of dislocations, and high degree of disorientation of the blocks and fragments over the grains, which are observed in the structure of the initial martensite. There is a high degree of disorientation of the blocks and fragments over the grains in the alpha and gamma states. There is a low temperature stability of the defects of the fine structure and, as a result, a shift of the austenite recrystallization temperature toward the side of low temperatures and rapid recrystallization of the alloy. The recrystallization temperature of the phase hardening of austenite, determined by the x-ray method, corresponds to the temperature of recrystallization of the alloy. At the time of the transition of the martensite deformation into austenite, the thin structure of the austenite is so formed that it follows the nature and the degree of defectiveness of the martensite crystalline lattice and its lowered thermal instability. For this reason, recrystallization takes place rapidly on heating. Orig. art. has: 5 figures and 2 tables.

SUB CODE: MM/ SUBM DATE: 04May63/ ORIG REF: 005

OTHER REF: 002

AVK
Card 2/2

L 14997-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b) IJP(c) MJW/JD/HW
ACC NR: AP5028564 (N) SOURCE CODE: UR/0126/65/020/005/0741/0748

AUTHOR: Gorbach, V. G.; Izmaylov, Ye. A.; Malyshev, K. A.

ORG: Institute of Physics of Metals AN SSSR (Institut fiziki metallov AN SSSR); Kirgiz gosuniversitet (Kirgizskiy gosuniversitet)

TITLE: Strengthening of the aging Fe-Ni-Ti alloys during direct and reverse γ-α-γ transformations

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 5, 1965, 741-748

TOPIC TAGS: martensite steel, martensitic transformation, metal aging, hardening

ABSTRACT: The mechanism of phase hardening (direct and reverse martensitic transformation) was studied in very low carbon Fe-Ni-Ti alloys. The established mechanism, involving the formation of fine substructure in the phase hardened austenite, proved inadequate in explaining the large increases in strength which were commonly observed. The compositions and M_s temperatures of the alloys used are shown in Table 1.

UDC: 669.15'24'295-157.96 : 539.4.016.3

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L 14997-66
ACC NR: AP5028564

TABLE 1

Alloys	Chemical composition, %						M_s
	C	Si	Mn	Ni	Cr	Ti	
H28	0,04	0,38	0,33	28,3	0,17	—	—20°
H27T	0,04	0,52	0,44	27,0	0,11	1,0	—30°
H27T1	0,04	0,50	0,40	27,0	0,11	1,36	—50°
H27T2	0,04	1,04	0,56	26,9	0,11	2,06	—70°

The ingots were homogenized at 1150°C for 18 hrs, drawn into rounds, sectioned into samples and annealed at 1100°C for 2 hrs (vacuum). The austenitic samples were subsequently cooled from room temperature to -196°C to induce the γ-α transformation. The resulting substructure was analyzed by x-ray methods: harmonic analysis was used to measure the block size and the microdistortion and the data were recorded in terms of specific dilatation, $\Delta\theta/\tan\theta$. For each of the alloys the mechanical properties are given in relation to the block size. The characteristic

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L 14997-66

ACC NR: AP5028564

block dimensions and the specific dilatation for the direct martensitic transformation did not change with increase in Ti content. The reverse transformation--back to austenite--was done by immersing the specimens in hot oil baths and heating at rates of 80-100 deg/sec. In this case, the block dimensions (substructure) of the austenite was again similar for alloys with or without Ti. However, significant differences in the yield strength of the austenite, formed by reverse transformation of martensite, were induced by changes in the rate of heating or the temperature of heating. It was demonstrated that the large rise in strengthening in alloys with Ti could be attributed to aging effects. It was postulated that the higher strength of H27Ti (resulting from phase hardening by slow heating) was due to combined aging and phase hardening. Wedge shaped specimens were heated electrically after being quenched into liquid nitrogen in order to produce temperature gradients across the specimens. The change in hardness was given as a function of distance along the specimens or equivalently for changing aging conditions. Hardness increased with aging, indicating the presence of some form of dispersion precipitate resulting from the Ti addition. Thus maximum hardening could be achieved in Fe-Ni-Ti alloys as a result of combined aging and phase hardening if the heating rate is slow or if the heating temperature is high enough. Orig. art. has: 6 figures, 5 tables.

SUB CODE: 11/ SUBM DATE: 07Dec64/ ORIG REF: 007/ OTH REF: 001

Card 3/3

GORBACH, V.G.; IZMAYLOV, Ye.A.; MALYSHEV, K.A.

Hardening of aging Fe-Ni-Ti alloys in the process of the direct and reverse $\gamma \rightleftarrows \delta \rightleftarrows \gamma$ transformations. Fiz.-met. i metalloved. 20 no.5:741-748 N '65. (MIRA 18:12)

1. Institut fiziki metallov AN SSSR i Kirgizskiy gosudarstvennyy universitet. Submitted December 7, 1964.

L 23636-66 EWT(m)/EWA(d)/T/EWP(t) IJP(c) JD

ACC NR: AP6005285 SOURCE CODE: UR/0413/66/000/001/0030/0030

INVENTOR: Gorbach, V. G.; Vladimirov, L. R.

ORG: none

TITLE: Heat treating cast austentic steels. Class 18, No. 177442 [announced by the Institute of Physics of Metals, AN SSSR (Institut fiziki metallov AN SSSR)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 30

TOPIC TAGS: heat treatment, metal heat treatment, phase hardening, metal hardening, annealing, austenitic steel, cast steel

ABSTRACT: An Author Certificate has been issued describing a method of heat treating cast austenitic steels including phase hardening and recrystallization annealing. To improve the mechanical properties, the steel, following recrystallization annealing, is subjected again to phase hardening.

[LD]

SUB CODE: 11/ SUBM DATE: 17Jan64/

Card 1/1 dda UDC: 621.785.79.669.15-194.56

ACC NR: AT6036275 SOURCE CODE: UR/0000/66/000/000/0026/0038

AUTHOR: Gorbach, V. G.; Malyshev, K. A.; Borodina, N. A.

ORG: Institute of Physics of Metals, AN UkrSSR (Institut metallofiziki AN UkrSSR); Institute of Physics of Metals, AN SSSR (Institut fiziki metallov AN SSSR)

TITLE: Using phase transfromation and age hardening for induced strengthening of austenitic alloys

SOURCE: AN UkrSSR. Struktura metallicheskikh splavov (Structure of metal alloys). Kiev, Izd-vo Naukova dumka, 1966, 26-28

TOPIC TAGS: austenite transformation, iron nickel alloy, titanium containing alloy, metal aging, metal property/ N27T alloy, N27T2 alloy, N27T3 alloy

ABSTRACT: The feasibility of strengthening austenitic iron-nickel-titanium alloys containing 27—29% nickel and 1.0—2.5% titanium by combining the effects of phase transformation and aging has been investigated. Phase transformation of alloys was achieved by refrigeration at -196C and reheating up to 800C, followed by cooling. This treatment produced $\gamma \rightarrow \alpha \rightarrow \gamma$ transformation, and increased the hardness of austenite to 225—265 HV, compared to 110—120 HV for the alloy after conventional treatment (annealing at 1100C followed by refrigeration). The hardness increased with increasing titanium content. Additional aging at 600C for four hr of the alloy

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ACC NR: AT6036275

containing 0.95% and 2.06% titanium increased its hardness to 280 and 400 HV, respectively. An alloy with 2.5% titanium had a tensile strength of 150 kg/mm^2, yield strength of 105 kg/mm^2, an elongation of 10%, and a reduction of area of 18%, compared to 70 kg/mm^2, 58 kg/mm^2, 5% and 8% for the conventionally annealed alloys.

SUB CODE: 13/ SUBM DATE: 27May65/ ORIG REF: 012/ OTH REF: 002/ ATD PRESS: 5106

Card 2/2

GORBACH, V. I.

Ю. В. [illegible]

Анализ [illegible] преобразования частоты.

II. СЕКЦИЯ РАСПРОСТРАНЕНИЯ РАДИОВОЛН

Руководитель [illegible]

9 июня

(с 10 до 12 часов)

[illegible]

А. В. [illegible],
В. Ф. [illegible]

Некоторые вопросы теории [illegible] при [illegible] распространении УКВ.

А. В. [illegible],
Г. И. [illegible],
[illegible]

Экспериментальное исследование [illegible] при дальнем тропосферном распространении УКВ.

[illegible]

(с 12 до 16 часов)

В. А. [illegible],
Н. А. Арманд

О механизме потерь усиления [illegible] при дальнем тропосферном распространении ультракоротких радиоволн.

А. В. [illegible]

К вопросу о применении метода [illegible] при [illegible] и его связь со строгим дифференциальным решением.

В. А. [illegible],
Ф. Г. [illegible]

К теории распространения радиоволн в среде со случайными неоднородностями над плоской проводящей поверхностью.

9 июня

(с 18 до 22 часов)

А. В. [illegible],
С. Я. [illegible],
В. И. Горбач

Флуктуации фазовых фронтов при распространении [illegible] радиоволн над [illegible].

[illegible]

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

67531

9,9000 SOV/141-2-3-8/26

AUTHORS: Men', A.V., Gorbach, V.I. and Braude, S.Ya.

TITLE: The Effect of the Separation Boundary on the Fluctuations of Radio Waves Propagated in a Non-homogeneous Medium

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 3, pp 388 - 394 (USSR)

ABSTRACT: The authors consider, on the geometrical optics approximation (Ref 8), amplitude and phase fluctuations of radio waves propagated in a turbulent medium in the presence of a plane separation boundary. In this case, the resultant field at the detector e is given by the sum of the direct wave and the wave reflected from the separation boundary (Figure 1). The two fields are given by Eq (1) in which R and θ are the modulus and the phase of the Fresnel refleçtion coefficient, respectively. The amplitudes and phases of the signals can be written in the form given by Eq (2), where the quantities with subscript "0" are mean values and ΔE_i and $\Delta\Psi_i$ are the fluctuation components of the corresponding quantities. For the case $r_1 \approx r_2$ (Figure 1), Eq (1) may be rewritten

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The Effect of the Separation Boundary on the Fluctuations of Radio Waves Propagated in a Non-homogeneous Medium

in the form given by Eq (5), where the symbols are defined by Eqs (3) and (4). In the case of small fluctuations, one has the approximate relations given by Eqs (6) and (7) and the phase of the resultant signal is given by Eqs (8) and (9). Assuming that the medium is isotropic, and using Eq (9a), one obtains Eq (10), where R_E and R_ψ are the correlation coefficients for amplitude and phase fluctuations. Eq (10) was obtained by neglecting the small quantities given by Eq (11). When $\varphi_1 \simeq 2\pi m$, E and ψ are given by Eq (12). In order to carry out numerical calculations, it is assumed, as a first approximation, that the amplitude and phase fluctuations of the separate components e_1 and e_2 of the resultant field (Eq 9a) are the same as in the absence of the boundary. In that case one obtains Eq (14), where ℓ is the scale of irregularities. Using Eqs (15) and (14'), Eq (10) may be written in the form given by Eq (16).

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The Effect of the Separation Boundary on the Fluctuations of Radio Waves Propagated in a Non-homogeneous Medium

It is clear from Eq (16) that, under the above assumptions, the amplitude and phase fluctuations in the resultant signal are equal in the distant zone. However, the dependence of the intensity of fluctuations on the wavelength, the parameter l, and the distance r_1 (Figure 1) may be quite different from that in an infinite medium. A comparison of this theory with experiment shows good agreement and hence it is clear that in practice it is necessary to take into account the effect of the boundary on the fluctuations. The above solution was obtained for the plane problem. It would be desirable to obtain a solution for a spherical Earth, particularly in the regions where geometrical optics approximation does not hold. There are 4 figures and 10 references, 7 of which are Soviet and 3 English.

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67531

SOV/141-2-3-8/26

The Effect of the Separation Boundary on the Fluctuations of Radio Waves Propagated in a Non-homogeneous Medium

ASSOCIATION: Khar'kovskiy institut radiofiziki i elektroniki AN UkrSSR (Khar'kov Institute of Radiophysics and Electronics of the Ac.Sc. Ukrainian SSR)

SUBMITTED: March 5, 1959

Card 4/4

9.9000

80121

S/141/59/002/06/002/024
E192/E382

AUTHORS: Men', A.V., Braude, S.Ya. and Gorbach, V.I.

TITLE: Experimental Investigation of the Phase Fluctuations of the Centimetre Waves Propagated Over the Sea Surface

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 6, pp 848 - 857 (USSR)

ABSTRACT: The results of an experimental measurement of the fluctuation of the phase fronts during the propagation of vertically polarized radio waves over the sea surface are reported. The frequency employed was 3 000 Mc/s and the experiments were carried out under various meteorological conditions during July-September and October-December over a sea route having a length of 33 km. The differential method of measurement was employed, in which the fluctuations of the phase differences of the signals received by diversity antennae were employed to determine the intensity and the decorrelation of the phase fluctuations at various points of the wave front. In order to reduce the effect of the boundary refraction, the receiving systems were situated at distances of 2, 5, 10, 30 and 100 m from the

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Experimental Investigation of the Phase Fluctuations of the Centimetre Waves Propagated Over the Sea Surface

first (the standard) antenna. Altogether six antennae were employed. The antennae were situated about 4 m above the sea surface. The error in the measurement of the phase-difference fluctuations was less than $\pm 1^{\circ}$, even if the amplitude of the received signals varied as much as 60 db. The measurement showed that as a rule the deviations φ of the phase differences with respect to the average value obey the normal law for all the transmitter heights h_1 and the distances between the antennae.

The results of the measurements are indicated in Figures 1 to 11. Figure 1 gives the overall distribution of the phase-difference fluctuation for various distances between the receiving antennae. Figure 2 shows the normalized energy spectrum of the "slow" phase fluctuations for various distances between the antennae. Figure 3 shows the dependence of the effective value of the phase fluctuation on the distance between the receiving antennae and the height of the transmitter. The dependence of the

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Experimental Investigation of the Phase Fluctuations of the Centimetre Waves Propagated Over the Sea Surface

effective value of the "slow" and "fast" fluctuations on the distance and height h_1 are illustrated in Figure 4. The characteristic of "slow" phase fluctuations for the case of an anomalous dependence on the height h_1 are shown in Figure 5. The characteristics of the "complex" fluctuations are illustrated in Figure 6. The change of the intensity of the "slow" fluctuations for the July-September period are shown in Figure 7. Figure 8 illustrates the intensity of the phase fluctuations as a function of the wind velocity (for the July-September period). The effect of the sea waves on the intensity of the phase fluctuations is illustrated in Figure 9. The effect of the radio refractions on the phase fluctuations is shown in Figure 10. The dependence of the normalized mean-square fluctuations of the phase fluctuation on the distance between the receiving antennae is illustrated in Figure 11. The authors

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80121
S/141/59/002/06/002/024
E192/E382

Experimental Investigation of the Phase Fluctuations of the Centimetre Waves Propagated Over the Sea Surface

express their gratitude to V.F. Shul'ge, O.M. Lebedeva and B.F. Veber for their participation in carrying out the measurements.

There are 11 figures and 14 references, 7 of which are English and 7 Soviet.

ASSOCIATION: Institut radiofiziki i elektroniki AN USSR (Institute of Radio-physics and Electronics of the Ac.Sc., Ukrainian SSR)

SUBMITTED: June 26, 1959

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7(7), 9(9)

SOV/21-59-7-10/25

AUTHOR: Men', A.V., Braude, S.Ya. Corresponding Member of the AS UkrSSR and Gorbach, V.I.

TITLE: Action of the Boundary on the Fluctuation of Radio Waves in Non-homogeneous Medium

PERIODICAL: Dopovidi Akademii Nauk Ukrains'koi RSR, 1959, Nr 7, pp 740-744 (UkrSSR)

ABSTRACT: Equations are derived for the fluctuation of amplitudes and phases of radio waves propagated along a plane surface in a non-homogeneous medium. It is shown that the fluctuation increases when the amplitude of the mean field drops to zero. There are 3 diagrams, 11 mathematic formulas and 10 references, 7 of which are Soviet and 3 English

ASSOCIATION: Instytut radiofizyky i elektroniky AN URSR (Institute of Radiophysics and Electronics AS UkrSSR)

SUBMITTED: March 6, 1959

Card 1/1

9 (9)

AUTHORS: Men', A. V., Braude, S. Ya., Gorbach, V. I. SOV/20-125-5-18/61

TITLE: The Fluctuations of the Phase Fronts in the Propagation of Decimeter-radiowaves Over the Surface of the Sea (Fluktuatsii fazovykh frontov pri rasprostranenii desyatisantimetrovykh radiovoln nad poverkhnost'yu morya)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 5, pp 1019-1022 (USSR)

ABSTRACT: Earlier papers dealing with this subject mainly take the amplitude fluctuations of radio signals into account. The phase fluctuations were investigated only in the zone of direct visibility (mainly over the mainland). The present paper deals with the least investigated problem, namely the experimental investigation of phase-front fluctuations over the sea. Measurements were carried out on the wave $\lambda = 10$ cm in the case of vertical polarization during the period of from July to September and October to December along a line of 33 km length leading exclusively over the sea within the boundaries of the "illuminated zone". the "half-shade" and "shade". In these investigations the differential method was

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used, which (by measurement of the pulsation of the phase difference of the electromotive force in some reception antennas) make determination of the amount and the degree of decorrelation of wave front fluctuations in distributedly arranged measuring points. The arrangement of 6 measuring antennas along a straight line for this purpose is described. In this way it was possible to measure phase fluctuations within the frequency range of from 0.01 to 100 cycles. Besides, provision was made for the possibility of filtering and separate indication of low-frequency (< 0.3 cycles) and high-frequency (> 0.3 cycles) (i.e. of the so-called "slow" and "fast") fluctuations. According to the results obtained by these measurements the fluctuations of phase differences were, with rare exceptions, distributed in accordance with the normal law. However, the fluctuations observed can be coordinated to the steady random processes only with certain reservations, for various cases of phase difference fluctuations of signals were detected. The dependence of fluctuation intensity on the intervals between the measuring points remained qualitatively equal in the case of all

experiments. The character of the height-dependence of intensity was considerably more manifold, and therefore it also served as a basis for the classification of experiments. All measurements may be subdivided into 4 main groups: 1) Quasisteady standard type of phase-fluctuations. Most experiments belong to this group which is characterized by a monotonous reduction of fluctuation intensity with an increasing height of the transmitter. Such a dependence is found with propagation within a local isotropic troposphere over a plane separating surface. These measurements have a high degree of steadiness and good reproducibility of the intensity and spectral composition of fluctuations. 2) The nonsteady standard type of fluctuations is characterized by a considerable non-steadiness of the fluctuations. 3) The anomalous type of phase-fluctuations: in measurements of this group the height-dependence differs considerably from that of the standard type. 4) The "flaring up" of fluctuations. This state usually did not last longer than a few dozen minutes, after which the usual state of the fluctuations was restored. There are 4 figures and 10 references, 3 of which

The Fluctuations of the Phase Fronts in the Propagation of Decimeter-radiowaves Over the Surface of the Sea

SOV/20-125-5-18/61

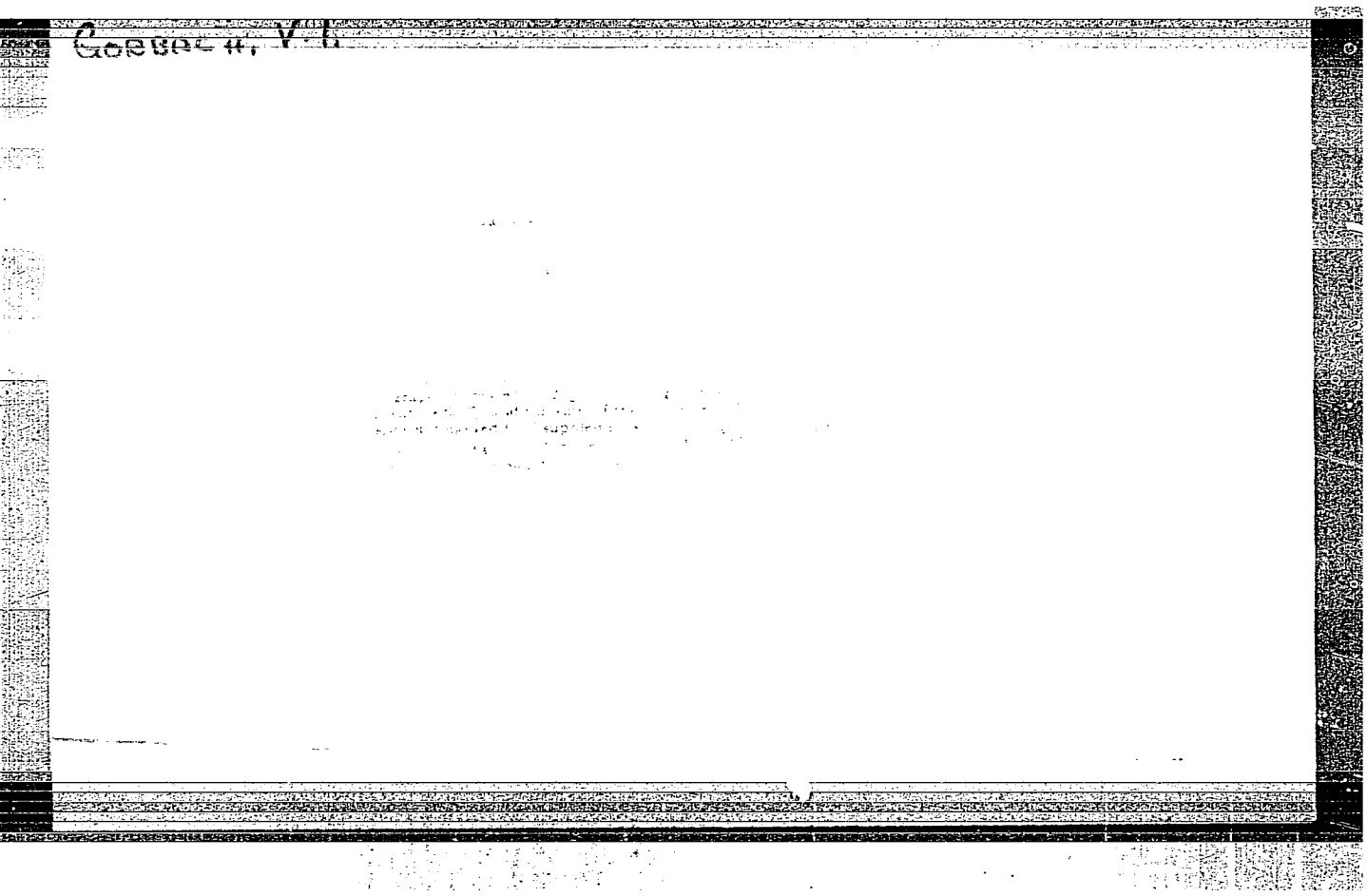
are Soviet.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk USSR (Institute for Radiophysics and Electronics of the Academy of Sciences of the UkrSSR)

PRESENTED: January 8, 1959, by B. A. Vvedenskiy, Academician

SUBMITTED: January 8, 1959

Card 4/4



1. GORBACH, V.I.

2. USSR (600)

4. Viticulture

7. Methods for quicker shaping of grapevines. Sad i og. no.10, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

GORBACH, V. I.; VOLCHANOV, V. L.

Viticulture

Concerning the study of alimentary space for the vine. Vin. SSSR 12 No. 7, 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952. UNCLASSIFIED.

M

Country : USSR
Category : CULTIVATED PLANTS. FRUITS. Berries.

Abs. Jour. : REF ZHUR-BIOL., 21, 1958, NO-96159

Author : Gorbach, V.I.
Institut. :
Title : Semi-Fan Training

Orig. Pub. : Vinodeliye i vinogradarstvo SSSR, 1958, No.1, 26-29

Abstract : Experiments made by the Samarkand Affiliate of the Uzbek Scientific Research Institute of Horticulture and Viticulture on a comparison between semi-fan and fan training of three grape varieties planted with a spacing of 2.5 x 2.5 meters have shown that on a four year average the former was not inferior to the fan training in basic agrobiological indices and surpassed it in economic indices.

Card: 1/1

GORBACH, V. L.

GORBACH, V. L.- "Kinematics of the Operating Mechanisms of Optical Grinding and Polishing Benches." Min of Higher Education USSR, Leningrad Institute of Precision Mechanics and Optics, Leningrad, 1955 (Dissertations For Degree of Candidate of Technical Sciences)

SO: Knizhnaya Letopis' No. 26, June 1955, Moscow

25(1) PHASE I BOOK EXPLOITATION SOV/1859

Gorbach, V. L.

Kinematika rabochikh organov opticheskikh shlifoval'no-poliroval'nykh stankov (Kinematics of Working Elements of Optical Grinding and Polishing Machines) Moscow, Oborongiz, 1958. 107 p. 3,550 copies printed.

Ed.: M. M. Fel'dshteyn, Engineer; Ed. of Publishing House: P. B. Morozova; Tech. Ed.: V. P. Rozhin; Managing Ed.: A. S. Zaymovskaya, Engineer.

PURPOSE: This book is intended for scientific and engineering workers in the optical industry, and may also be used by students in this field.

COVERAGE: The author gives the kinematic bases of the theory of manufacturing optical parts on modern grinding and polishing machines. He also discusses in detail the methods of kinematic investigation of the relative movements of the tool and the part. The practical application of the results obtained from such investigation will make it possible to outline the road to higher productivity of optical machines and to improve the quality of the optical parts produced. G. D. Ananov is mentioned as having contributed to this field. The

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author thanks K. G. Kumanin for help in preparing the book. There are 3 references: 1 Soviet and 2 French.

TABLE OF CONTENTS:

Kinematics of Working (Cont.)

SOV/1859

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AVAILABLE: Library of Congress

GO/lsb
7-28-59

Card 4/4

GORBACH, V.L., kand.tekhn.nauk, dotsent

Patterns of velocities and accelerations of points of a body in plane parallel movement. Izv.vys.ucheb.zav.; mashinostr. no.7: 5-9 '63. (MIRA 16:11)

1. Dnepropetrovskiy sel'skokhozyaystvennyy institut.

SMIRNOV, S.S.; GORBACH, V.M.; EYSMONT, I.I.

Mechanization of the stopcock control board in the heating of coke ovens. Koks i khim. no. 5:32-33 '61. (MIRA 14:4)

1. Bagleyskiy koksokhimicheskiy zavod.
(Coke ovens)

GORBACH, V.M.; DZHULAY, V.D.

Experimental work conducted by the anticorrosion research group of the Central Plant Laboratory. Koks i khim. no.1:68 '64. (MIRA 17:2)

1. Bagleyskiy koksokhimicheskiy zavod.

AUTHOR: Gorbach, V. M. (Engineer). 97-10-8/14

TITLE: **Experience with Winter Concreting** . (Opyt zimnego betonirovaniya).

PERIODICAL: Beton i Zhelezobeton, 1957, Nr.10. pp.410-411. (USSR).

ABSTRACT: The No.47 Trust (Krasnoiarsk) has carried out extensive concreting in severe winter conditions. In the winter of 1956-7 columns, beams, floor slabs, ventilation blocks etc., totalling 1,500 m^3, were concreted on open yards. Electrical heating was applied during the drying period of the concrete until the product reached 25 - 30% of its final strength. During the slow cooling process the concrete reached 50% of its final strength. The heating elements, steel bars of 8-10 mm diameter, were placed in the concrete approximately 250 mm apart, allowing concreting to be carried out in temperatures down to -35 to - 40°C. In situ monolithic concreting was carried out during similar weather conditions and during the construction of industrial buildings. For this, heating was provided by electrode panels and maintained until the concreting achieved 70% of the final strength. For underground concreting, ordinary "cold" concrete was used. The reinforced

Card 1/2

Experience with Winter Concreting 97-10-8/14

concrete walls of the ventilating chambers of industrial buildings were made of concrete Mark 100. The concrete mix consisted of slag and Portland cement, in the proportion of 1-1:46-4.6. When concreting was carried out at a temperature of -5°C, 6% of nitrium chloride was added, and the additive increased in proportion to the fall in temperature. Tests were carried out on cubes 150 x 150 x 150 mm, hardening under exactly the same conditions, and of the same mix. The strength results were as follows:

After	28	days	54 kg/cm^2
"	60	"	79 "
"	90	"	96 "
"	120	"	147-184"

In 1956 concrete walls built during the winter, were checked, and the quality of concrete found to be satisfactory. There was no trace of either efflorescence or corrosion. There is 1 Table.

AVAILABLE: Library of Congress.

Card 2/2 1. Concrete-Preparation 2. Nitrium chloride-Applications 3. Concrete-Temperature effects

GORBACH, Yu. P.

24417 GORBACH, Yu. P. Ozhogi ot vosplameneniya gaza. Vrachob. Delo, 1949, No. 8, STB. 703-06.

SO: Letopis, No. 32, 1949.

[redacted], Ye. D.

"Stimulative Therapy in the Treatment of Skin Diseases."

Vestnik vererologii i dermatologii (Bulletin of Venerology Dermatology), o 1, January-February 1954, (biiomper), Moscow.

L 21399-66 EWT(m)/EPF(n)-2/EWP(t) IJP(c) JD/JG
ACC NR: AP6003797 SOURCE CODE: UR/0181/66/008/001/0242/0244

38
B

AUTHORS: Gorbachenko, B. I.; Tolpygo, K. B.

ORG: Kiev State University im. T. G. Shevchenko (Kiyevskiy gosudarstvennyy universitet)

TITLE: Determination of the polarization energy of the NaCl crystal in the presence of positive-ion vacancy

SOURCE: Fizika tverdogo tela, V. 8, no. 1, 1966, 242-244

TOPIC TAGS: sodium chloride, crystal theory, electric polarization, crystal vacancy, positive ion

ABSTRACT: The results of a microscopic theory of crystals, developed by one of the authors (Tolpygo, UFZh v. 3, 145, 1958 and earlier papers), is used to determine the energy of polarization of a crystal by an ion vacancy, and the work necessary to remove an ion from a crystal. The particular calculations are made for the sodium ion in NaCl. The final expression for the polarization energy is in the form of the sum of the polarization energy of point charge due to

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L 21399-66
ACC NR: AP6003797

the polarization of the electron shells only, a term of similar nature but the short-range field, a mixed term due to the long and short range forces, and a term due to the energy of the displacements of the normal coordinates into new positions of equilibrium under the influence of the applied forces. The numerical value obtained for the polarization energy of the NaCl crystal is -3.21 ev, of which 76 per cent is due to the noninertial polarization of the shells of the point-charge field. The work of removal of the positive ion is 4.77 ev, which is close to that obtained by results by others. The binding energy per cell is 7.98 ev, which is also in good agreement with other results. The agreement confirms validity of Tolpygo's microscopic thoery. Orig. art. has: 8 formulas.

SUB CODE: 20/ SUBM DATE: 12Jul65/ ORIG REF: 009

Card 2/2

USSR / Pharmacology, Toxicology. Chemotherapeutic Agents, Antituberculous Agents. V

Abs Jour: Ref Zhur-Biol., No 18, 1958, 85284.

Author : ~~Gorbachenko, L. A.~~
Inst : Institute of Tuberculosis, Acad. Med. Sc. USSR.
Title : The Reactions of the Central Nervous System in Chronic Forms of Pulmonary Tuberculosis and Treatment of Them with Antibacterial Preparations.

Orig Pub: Tr. In-ta tuberkuleza Akad. med. nauk SSSR, 1956, Vol 8, 143-152.

Abstract: Histologic studies of the brain in chronic forms of tuberculosis have shown that, in the CNS, there are pronounced morphologic changes in the vessels, neuroglia, nerve cells of the brain, and nerve fibers. These changes are non-specific and resemble changes seen in different infectious and toxic con-

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USSR / Pharmacology, Toxicology. Chemotherapeutic Agents, Antituberculous Agents. V

Abs Jour: Ref Zhur-Biol., No 18, 1958, 85284.

Abstract: ditions. The progressive dystrophic and necrobiotic changes in all the elements of the brain depend on the dissemination of the tuberculous process, the acuteness and duration of the disease, the severity of complications, and the individual properties of the organism. On the basis of pathologic changes in the brain in tuberculosis, there is damage to the walls of vessels, disturbances of their permeability, disorders of the metabolic processes in the brain tissues, and also disruptions of the functional state of the neuroglia and nerve cells. Changes in the elements of the CNS depend on the promptness and intensity of antibacterial therapy. If the latter is continued sufficiently long and exhibits a clinical effect on the tuberculous pro-

Card 2/3

USSR / Pharmacology, Toxicology. Chemotherapeutic Agents, Antituberculous Agents. V

Abs Jour: Ref Zhur-Biol., No 18, 1958, 85284.

GORBACHENKO, L. A., Cand Med Sci (diss) -- "Patho-histological changes in the brain in chronic forms of pulmonary tuberculosis of man and in experimental tuberculosis in cats". Minsk, 1957. 19 pp (Acad Med Sci USSR)(KL, No 11, 1960, 137)

USSR / Human and Animal Pathology. Nervous System. S-2
Central Nervous System.

Abs Jour: Ref Zhur-Biol., No 14, 1958, 64759.

Author : Gorbachenko, L. A.
Inst : Institute of Tuberculosis, Academy of Medical Sciences, USSR.
Title : Morphological Reactions of the Central Nervous System in Experimental Tuberculosis in Cats.

Orig Pub: Tr. in-ta tuberkuleza. Akad. med. nauk SSR, 1957, 9, 313-322.

Abstract: Changes in the basic argyrophilic substance (AS) of the cerebral blood vessels appear as early as 2 hours after infection. Progressive dilution of AS is accompanied by hydropic changes of the nerve cells. Subsequently, AS thickens, acute changes in the nerve cells diminish, and simultaneously

Card 1/2

USSR / Human and Animal Pathology. Nervous System. S-2
Central Nervous System.

Abs Jour: Ref Zhur-Biol., No 14, 1958, 64759.

Abstract: proliferation of the macroglia and of the microglia takes place. As the process continues, vascular lesions increase in the lungs, as well as dystrophic and necrobiotic processes in the nerve cells and in the glia cells. To the extent of the recovery of the animals, these changes disappear, the AS thickens functional-morphological changes of the AS and of the elements of the glia have an important bearing on the development of changes in the nerve cells. -- G. I. Vavilin.

Card 2/2

PUZIK, Valentina Il'inichna; UVAROVA, Ol'ga Alekseyevna; GORBACHENKO, Lev Aleksandrovich; TOLGSKAYA, M.S., red.; SENCHILO, K.K., tekhn. red.

[Histopathology of the nervous system in tuberculosis in man] Gistopatologiia nervnoi sistemy pri tuberkuleze u cheloveka. Moskva, Medgiz, 1961. 222 p. (MIRA 15:7)
(TUBERCULOSIS—NERVOUS SYSTEM)

GORBACHENKO, N.K.; YAKOVLEV, V.I.

Screen for observing ingot stripping from preheating furnaces.
Sbor.rats.predl.vnedr.v proizv. no.1:27 '61. (MIRA 14:7)

1. Konstantinovksiy metallurgicheskiy zavod.
(Furnaces, Heating)

BLINOV, V.A., nauchnyy sotrudnik, kand.tekhn.nauk; RUMYANTSEVA, L.P., nauchnyy sotrudnik; ANISHCHUK, Ye.N., nauchnyy sotrudnik; SHVELEVA, L.S., inzh.; GORBACHENKOVA, A.V., inzh.

Emulsion dyeing of cotton and blended cotton-lavsan goods with the leuco esters of vat dyes. Tekst.prom. 25 no.2:65-67 F '65. (MIRA 18:4)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley (for Blinov, Rumyantseva, Anishchuk). 2. Kombinat "Trekhgornaya manufaktura" imeni Dzerzhinskogo (for Shmeleva, Gorbachenkova).

GORBACHEV,A.; STEPANOV,B.

Device for transferring fuel from gasoline cans to trucks, tractors, and combines. Avt.transp.33 no.6:20-21 Je '55. (MLRA 8:10)
(Gasoline) (Service stations)

GORBACHEV, A.

Fashion, color, and the customer. Sov. profsoiuzy 18 no.6: 34-35 Mr '62. (MIRA 15:3)

1. Direktor Moskovsko-Leninskogo universal'nogo magazina. (Clothing industry)

AID P - 4556

Subject : USSR/Electronics

Card 1/2 Pub. 90 - 10/11

Author : Gorbachev, A. A.

Title : Compensation method of reducing nonlinear distortions.

Periodical : Radiotekhnika, 4, 67-74, Ap 1956

Abstract : In April 1954, Prof. D. V. Ageyev suggested to the author the investigation of the compensation method of reducing nonlinear distortions. The negative feedback which is widely applied to reduce nonlinearities in large l.f amplifiers has some essential deficiencies. The author investigates the basic theoretical aspects of the compensating method which consists in compensating by shifting the distorted voltages (or currents) by 180°. He presents connection diagrams, finds the stability of the method, the characteristics of the compensating circuit, and finally checks the method experimentally. He finds that an 8 to 10 fold reduction of nonlinear

Radiotekhnika, 4, 67-74, Ap 1956 AID P - 4556

Card 2/2 Pub. 90 - 10/11

distortions is obtainable. Two diagrams.

Institution : None

Submitted : D 17, 1955

GORBACHEV, A. A.

"Adapter for Elimination of Pulse Interferences," by A. Gorbachev, Radio, No 11, Nov 56, pp 42-43

This article describes the construction and performance of a one-tube (6N1P) pulse interference eliminator for commercial radio receiving sets. The device operates on the principle of lowering the level of the pulse interference, as suggested by the Soviet scientist, D. V. Ageyev.

This adapter has been tested with the Baltika, radio receiving set, and was found to be able to eliminate almost completely industrial and atmospheric interferences of the nature of individual short pulses; however, some interferences of a continuous nature were not fully suppressed.

Sum 1219

AUTHOR: GORBACHEV, A.A. 108-6-8/11 [redacted]

TITLE: The Experimental Investigation of a Restriction of Impulse Noises by the Transformation of the Spectrum and with the Help of an observation Threshold. (Eksperimental'noye issledovaniye ogranicheniya impul'snykh pomekh s preobrazovaniyem spektra i sledyashchim porogom, Russian)

PERIODICAL: Radiotekhnika, 1957, Vol 12, Nr 6, pp 64-68 (U.S.S.R.)

ABSTRACT: First, the system of a limiter with two linear spectrum transformers is dealt with, and it is shown that the noise level at the output of the investigated device decreases down to the level of the high frequency components of the useful signal (which is usually considerably below the average signal level). The advantage offered by this method as a measure against noise is the conservation of the necessary transmissivity range of the low frequency part of a receiver. The system with linear transformers and with a limiting observation threshold is investigated and it is shown that for the technical realization of these ideas, the method which uses a limiter with a limiting threshold which watches the level of the low frequency useful signal, is the better one. The results obtained by the experimental investigation of a limiter system with an observation threshold and with two linear spectrum transformers are described. It was found that

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000516020016-0

108-6-8/11

The Experimental Investigation of a Restriction of Impulse Noises by the Transformation of the Spectrum and with the Help of an Observation Threshold.

this system is well able to suppress impulse noises with a duration of up to some milliseconds. The reception, which, at first, was impossible, becomes quite satisfactory, and sometimes also good. The advantage of this method is the necessity of using three tubes. (With 8 Illustrations).

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED: 3.5.1956
AVAILABLE: Library of Congress

Card 2/2

AUTHOR: Corbachev, A. A., Regular Member of the Scientific-Technical Association of Radio Engineering and Electric Communications 108-1-5/10

TITLE: The Suppression of Pulse Interference by Means of a Non-Linear Transformation of the Form of a Frequency Spectrum (Podavleniye impul'shykh pomekh posredstvom nelineynogo preobrazovaniya formy ikh chastotnogo spektra)

PERIODICAL: Radiotekhnika, 1958, Vol. 13, Nr 1, pp. 56-61

ABSTRACT: The author experimentally investigated the method by D. V. Ageyev for the suppression of pulse interference by means of using two reciprocal spectral transformations and an amplitude limiter. It was found that this method is much more effective than that of the usual limitation. The further investigations in this direction showed principially new possibilities for the increase of the effectiveness of similar systems. In this method the separation of signal and interference by using two differences between the pulse interference and the signal - the difference with respect to the amplitude and to the spectrum - is realized. Various variants for a linear transformation of the spectrum preceding the linear limitation of amplitude are investigated

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The Suppression of Pulse Interference by Means of a Non-Linear Transformation of the Form of a Frequency Spectrum 108-1-5/10

and the usefulness of the application of transformers with a resonance characteristic is substantiated. The results of theoretical and experimental investigations are given. It is shown that in using two reciprocal spectrum transformers together with a limiter an essentially greater effectiveness in the suppression of pulse interference is obtained then is the case with using a simple limiter. The characteristics of the first transformer must be of such a kind that 1.- the greatest ratio between the interference level and the level of the effective signal at the input of the limiter is secured, and 2.- the limitation leads to such a transformation of the form of the interference-spectrum that in it the second transformer can effect the selection of the signal with the greatest efficiency. In the reception of radio programs these demands were met to a greatest extent by an input transformer with a resonance form of the frequency characteristic. In this the resonance frequency must be sufficiently high as it must be outside of the limits of the basic band in the spectrum of the (intelligence) effective signal. There are 8 figures and 4 references, 3 of which are Slavic.

SUBMITTED: June 26, 1957

Card 2/2

1. Pulses-Interference-Suppression 2. Frequency-Spectrum-Nonlinear-transformations-Applications

GORBACHEV, A.A., Cand Tech Sci --(diss) "Study of the method of suppression of impulse interferences by means of non-linear transfomation of the form of their frequency spectrum." Gor'kiy, 1959. 7 pp (Min of Higher Education . Gor'kiy Polytech Inst im A.A. Zhdanov. Chair of Radioreceiving Sets) 150 copies (KL, 30-59, 120)

-2/-

GORBACHEV, A.A.; KRYUKOV, M.

Interest in radio should be developed on a world-wide scale.
Radio no.2:12 F '60. (MIRA 13:5)

1. Chleny soveta Bryanskogo radiokluba.
(Radio)

20329

24.3600 1163,1138, 1164

S/188/60/000/006/002/011
B101/B204

AUTHOR: Gorbachev, A. A.

TITLE: The change in the reflection coefficient of metals if direct current flows through the latter

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 3, fizika, astronomiya, no. 6, 1960, 8-9

TEXT: Whereas interaction between light and metal has been made the object of accurate research for cases in which the term $4\pi j/c$ of the Maxwell equations may be neglected, the present paper deals with the more complicated problem of the case $j \neq 0$. The conduct of current through metal must produce an effect upon its properties and thus also upon the properties of the light reflected by it. It was found that the reflective power of the metal is changed during the passage of current. According to the nature of the metal, a relative change in the reflection coefficient occurs by tenth parts of percents at current densities of 1 - 3 a/mm^2 or 7 - 10 a/mm^2. Measurement of $\delta = (I - I_0)/I_0$ was carried out by means of an apparatus similar to that developed by G. S. Krinchik (1959). The

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specimens through which the current was sent, were mechanically polished lamellas having a cross section of $0.5 \cdot 6$ mm^2. Measurements were carried out for white light. Stabilization of the current of the light source permitted measurements, whose errors did not exceed 0.01%. The effect was measured, which in analogy to magnetic optics may be described as meridional effect. The vector $\vec{j}$ of current density lies in the plane of incidence of light. The experimental data for the p-wave are given in the table. (In the case of the s-wave this effect lacked nearly entirely). The angle of incidence of light was 45°. By p-wave the light beam is understood, which is polarized in such a manner that the electric vector lies in the plane of incidence of light. Measurements for Ni and W were carried out at 3 and 5 a/mm^2 more accurately. In the case of other metals, only qualitative measurements were carried out for the purpose of determining amount and sign of δ. That an oxide film produced no effect upon δ could be seen from the fact that measurements carried out 2 minutes and 24 hours after polishing agreed within the limits of measuring errors. The change in the intensity of δ has different signs in different metals. In the case of some metals the reflection coefficient is increased during the passage of current, in case of others it is

diminished. Measurements were carried out on the eight non-ferromagnetic metals W, Mo, Bi, Sb, Zn, Pt, Al, and Cu, as well as on the two ferromagnetic metals Fe and Ni. In the non-ferromagnetic metals investigated, δ has the same sign as the R_0 of the Hall constant. The opposite sign of δ with respect to the constants R, and R_0 in Fe and Ni might be explained by an extraordinary Hall effect, as in ferromagnetics, the second Hall term is larger than the first. It is mentioned that in Fe and Ni, the value of δ depended on the thermal treatment of the specimens. The table gives the measured results for tempered specimens of Ni and Fe. Non-tempered specimens showed a considerably lower effect. In other metals, the effect produced by tempering was not investigated. A certain tendency of an increase of δ with an increase of the Hall constants was observed. Thus, δ is larger for Ni, Fe, Mo, and W than for Al, Cu, and Zn; in Bi, δ is even larger. A change in the current direction produced no influence upon magnitude and sign of δ. [Abstracter's note: The above is a complete rendering of the original.] There are 1 table and 1 Soviet-bloc reference.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet, Kafedra magnetizma (Moscow State University, Department of Magnetism)

The change in the reflection...

S/188/60/000/006/002/011
B101/B204

SUBMITTED: March 3, 1960

1 Материал	2 Вид поляризации света	3 Изменение интенсивности δ в % при различных плотностях тока			
		1А/мм²	3А/мм²	5А/мм²	10А/мм²
Bi	γ p-волна	−0,5	−2	—	—
	∫ s-волна	0	−0,5	—	—
Sb	γ p-волна	0	0,2	—	—
W	γ p-волна	0	0,18	0,25	0,9
	∫ s-волна	0	0	0	0
Ni	γ p-волна	0	0,14	0,20	0,8
Fe	γ p-волна	0	—	−0,4	—
Mo	γ p-волна	0	—	0,3	—
Al	γ p-волна	0	0	—	−0,3
Zn	γ p-волна	0	0	—	0,3
Cu	γ p-волна	0	0	0	−0,2
Pt	γ p-волна	0	0	0	−0,2

Legend to the table: 1) Material; 2) Type of light polarization; 3) Change in the intensity of δ in % at different current densities; 4) p-wave; 5) s-wave.

Card 4/4

27764
S/058/61/000/007/071/086
A001/A101

6.9440

AUTHOR: Gorbachev, A.A.

TITLE: On interference resistance of a limiter with the threshold of limiting, following the signal level

PERIODICAL: Referativnyy zhurnal, Fizika, no. 7, 1961, 323, abstract 7Zh297 ("Tr. Gor'kovsk. politekhn. in-ta", 1960, v. 16, no. 2, 12 - 16)

TEXT: The author discusses the problem of reducing the noise-to-signal ratio at radio reception in the presence of pulse interferences. A limiter with the threshold following the signal level ensures the ratio of interference level to signal level not exceeding unity during the entire time of reception; this is its advantage in comparison with the simple amplitude limiter with a constant threshold. The author considers one type of pulse interferences whose individual pulses have the shape which is well approximated by function $u(t) = at \exp(-\alpha t)$ for $t > 0$ and $u(t) = 0$ for $t < 0$. He states that the ratio of interference energy at the output of the proposed limiter to interference energy at the output of the limiter with the constant threshold is equal (under the same con-

Card 1/2

On interference resistance ...

ditions at the input) to the quantity which is known in broadcasting as nonuniformity of transmission. This is confirmed by experimental results. The application of the proposed limiter can result in a three- or four-fold reduction of interference energy at the receiver output in comparison with the use of limiters with constant threshold.

G. Medvedev

[Abstracter's note: Complete translation]

4

Card 2/2

89826

6.7300 (1524)
6.9416
6.9800

S/111/61/000/001/001/002
B107/B212

AUTHORS: Gorbachev, A. A., Candidate of Technical Sciences, and ~~Rodionov, Ya. G.,~~ Candidate of Technical Sciences (Gor'kiy)

TITLE: Method of increasing the interference immunity of multi-channel systems used for high-frequency telephony

PERIODICAL: Vestnik svyazi, no. 1, 1961, 13-14

TEXT: A unit that is able to suppress periodic pulse interferences in multi-channel systems of high-frequency telephony is briefly described. The unit has been developed by the Gor'kiy Scientific Research Institute. It works on the principle of eliminating the signal and also the interfering pulse. If the duration of the short interruptions does not amount to more than 35%, then the conversation is still well intelligible, even under adverse conditions, i.e., if the interruptions have a frequency of 300-888 cps. The unit consists mainly of three subsequent stages. 1) The first stage separates the interfering pulse from the mixture of signal and interference, and is used to control all other

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stages. This stage consists of a tuned amplifier which is tuned to the carrier frequency of the interferences, and its resulting band width is such that the interference amplitude is amplified maximally compared to the signal. 2) The second stage delays the interfering pulse by an interval which roughly corresponds to its period, and a control pulse is generated, which corresponds to the duration of the interference pulse. The stage consists of a number of multi-vibrators which are cleared by pulses of stage 1. 3) The third stage is blocked for the duration of the control pulse. Every pulse is used to eliminate the following pulse. Fig. 2 shows a simplified circuit diagram, and the mode of operation is explained in its legend. The unit has been tested with communication systems of the type B-12 (V-12) at three amplifier stations. The input has been applied to the socket of the filter K-33 (K-33), and the output to the control grid of the second amplifier tube of the element BY(VU) belonging to the system V-12. It has been found that the psophometric interference voltage will drop by a factor of 3 - 25. Transient interferences and non-linear distortions of the voice signal are much higher due to the method applied, but intelligibility is maintained even

89826

Method of increasing the interference... S/111/61/000/001/001/002
B107/B212

under adverse conditions. There are 2 figures.

ASSOCIATION: Gor'kovskiy NII (Gor'kiy Scientific Research Institute)

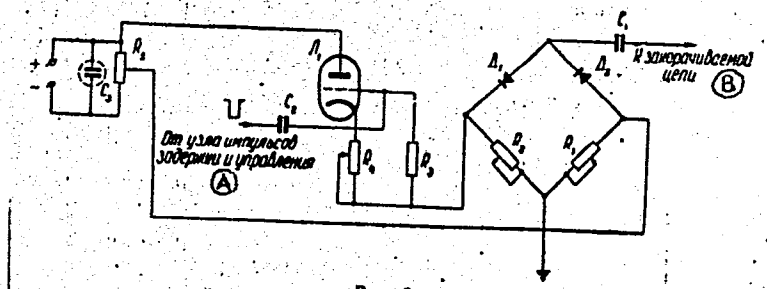

Рис. 2

Card 3/4

Legend to Fig. 2: A - from stage 2; B - to short-circuited chain; main component of the stage is a two-side diode limiter consisting of diodes $Д_1$ and $Д_2$. The diode limiter is connected to the receiver part over a tuning capacitor C_1. Between two interference pulses, the limiter is blocked by the current passing through resistors R_1 and R_2. The current is controlled by R_4; tube $Л_1$ is used to open and close the circuit. A control pulse will block the tube when an interference pulse has been received; the limiter opens, and due to its small resistance, the group tract of the system is short-circuited. Tube $Л_1$ opens again when the pulse stops, and the limiter is closed again. A bell-shaped pulse is found to be best for a blocking pulse.

GORBACHEV, A.A.; KRASIL'NIKOV, V.D.

Detection of AM and FM oscillations using the steepness of the high-frequency oscillation. Izv. vys. ucheb. zav.; radiotekh. 4 no. 2:218-220 Mr-Ap '61. (MIRA 14:5)

1. Rekomendovana Nauchno-issledovatel'skim radiofizicheskim institutom pri Gor'kovskom gosudarstvennom universitete imeni N.I. Lobachevskogo.
(Radio detectors)

S/126/61/011/002/003/025
E032/E514

AUTHORS: Krinchik, G. S. and Gorbachev, A. A.

TITLE: Magnetooptic Resonance in Nickel on Ultraviolet Frequencies

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.2, pp. 203-206

TEXT: In a previous paper the present author and R. D. Nuraliyeva (ZhETF, 1959, 36, 1022) pointed out that the magnetooptic resonance due to electronic s-d transitions is to be expected in the ultraviolet region of the spectrum. In the present paper an experimental study of this effect is reported. The apparatus used to measure the magnetooptic characteristics of nickel and iron below 2480 Å was similar to that described by the first of the present authors in Ref.4. The detecting element was a ФЭУ-18 (FEU-18) photomultiplier, while the compensating element was the vacuum photocell СЦВ-4 (STsV-4). The spectrograph ИСП-22 (ISP-22) was used in conjunction with the mercury quartz lamp ПРК-4 (PRK-4) as the monochromator. The principal difficulty was to screen the photomultiplier from the electromagnetic

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field, since it was necessary to measure very small changes in the intensity of the reflected light during the magnetization reversal in ferromagnetic specimens. In order to reduce the magnetic flux leakage, the specimens were in the form of toroids (internal diameter 20 mm, external diameter 30 mm). A part of the surface of these toroids, having an area of about 1 cm^2, was kept free of the magnetizing coil and the light was reflected from it. The specimens were polished and annealed in vacuum prior to insertion of the magnetizing coils. Magnetic saturation could be obtained using 1000 turns and a current of 0.5 A. Fig.2 gives the real and imaginary parts of the magnetooptic parameter calculated by Nuraliyeva, using the optical constants for nickel as given by R. S. Minor and W. Meyer in Ref.5. Fig.3 gives the relative change in the real and imaginary parts of the non-diagonal term of the dielectric constant tensor, i.e. $m_1 = Re(\varepsilon M)/\varepsilon_1$ and $m_2 = Im(\varepsilon M)/\varepsilon_2$, where $\varepsilon = \varepsilon_1 - i\varepsilon_2$ is the diagonal term and $M = M_1 - iM_2$ is the complex magnetooptic parameter. In both figures the energy (in eV) is plotted along the horizontal axis. The physical meaning of m_1 and m_2 is as follows. When $M < 1$,

$\mu \ll 1$ we have $\varepsilon_{\pm} = \varepsilon \pm \varepsilon M$, where ε_+ and ε_- are the dielectric constants for right and left-handed circularly polarized waves (G. S. Krinchik and M. V. Chetkin, Ref.6). It follows that m_1 describes the difference in the real parts of the dielectric constant of a saturated ferromagnetic for right and left handed polarizations, while m_2 describes the difference in the imaginary parts, i.e. the energy loss. In the case of ferromagnetic, cyclotron, plasma resonances, the quantities analogous to m_1 and m_2 exhibit the following behaviour: m_1 changes sign at the resonance frequency, while m_2 in general passes through a maximum. Hence in the present case the resonance frequency is determined as the frequency at which m_1 changes sign and this occurs at 4.7 ± 0.2 eV. This result is in agreement with X-ray data and also data on characteristic electron energy losses. It is suggested that the resonance is due either to s-d transitions or to plasma oscillations of free electrons. Measurements were also made on iron specimens but the magnetooptic resonance was not established. There are 2 tables, 3 figures and 7 references: 4 Soviet and 3 non-Soviet.

Card 3/4

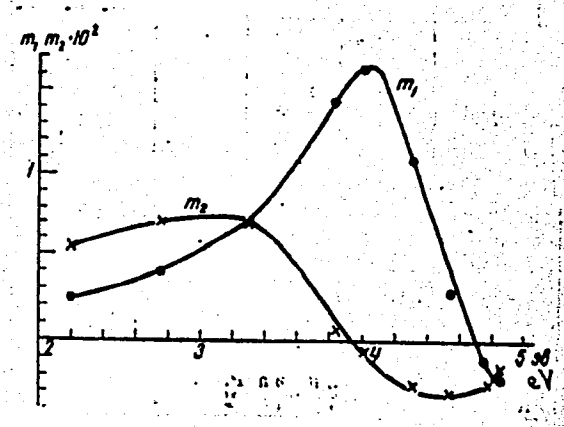
Magnetooptic Resonance ... S/126/61/011/002/003/025
E032/E514

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im.M.V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: May 9, 1960

Fig.2

Fig.3



Card 4/4

6,9800 89136

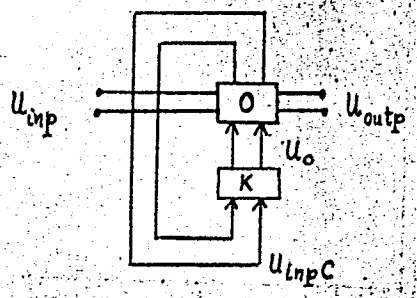
S/108/61/016/002/009/011
B107/B212

AUTHOR: Gorbachev, A. A., Member of the Society of Radio Engineering and Electric Communication

TITLE: A limiter with a tracking threshold for pulse interferences

PERIODICAL: Radiotekhnika, v. 16, no. 2, 1961, 60-70

TEXT: This article investigates the operation of a limiter with a tracking threshold in the low-frequency section of a radio receiver. The block diagram of such a limiter consists of an actual limiter O and a controlling stage K; the input voltage is $u_{inp}(t)$, its amplitude envelope is $U_{inp}(t)$. The limiter performs a two-side amplitude limitation of the signal at a level $U_o(t)$ which is obtained in K by rectifying voltage U_{inpC}. Fig. 2 shows a simplified circuit diagram of such a limiter. The following assumptions have



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been made for calculations: The rate of change of the signal envelope shall be much smaller than that of its instantaneous values. If such magnitudes are constant with respect to time they shall be denoted by $\overline{U}_{inp}$ etc. The inertia of the limiter shall be negligible with respect to the signal. The transmission coefficient of 0 is assumed to be equal to 1 for amplitudes of the signal which stay below the threshold. R is assumed to be much greater than the diode resistance in forward direction. The following is valid for the general case:

$U_{inpC} = U_o + (U_{inp} - U_o)h$; h denotes the distribution coefficient difference $(U_{inp} - U_o)$. This coefficient is assumed to be independent of U_{inp}. Basically there are two different operations of a limiter: $h = 1$ and $h \ll 1$. It has been found experimentally that specific distortions will occur for lower values of U_{inp} and $h \ll 1$. A calculation resulted in

$$\overline{U}_0 = \frac{\frac{1}{a} 2h\overline{U}_{ex}(1-h) \pm \sqrt{\frac{1}{a^2} - 4\frac{h}{a}\overline{U}_{ex}(1-h)}}{2(1-h)^2}. \qquad (4)$$

i.e., there are two values of $\overline{U_o}$ for $1/\alpha < \overline{U_{inp}} < 1/[4h\alpha(1-h)]$. $\alpha = \overline{U_o}/\overline{U^2_{inpC}}$. Calculating the stability of the system showed

$$\xi = \xi_0 e^{-\frac{1-K'(1-h)}{rc}t}, \quad (7) \quad (7);$$

where ξ is the voltage deviation of U_{inp} from its equilibrium condition and K' the differential value of the transmission coefficient for stage K in equilibrium. From Eq. (7) follows: The system is instabile for $K'(1-h) < 1$, the transition rate of the system for changing from one state into another is a function of rc, K', and h. Since the system shows a higher interference stability for small values of h, the limiter has to be operated at high enough voltages in order to avoid signal distortions. The following expression is given for the distortion of a sinusoidal envelope of the signal:

$$\eta = 1 - \frac{K}{1+m}\left[1 + \frac{m}{1+(\Omega_a rC)^2}\right], \quad (11)$$

Card 3/6

A limiter with a tracking...

where $\eta = (a-b)/a$ (Fig. 6), m modulation depth coefficient, Ω_a envelope frequency, rC time constant of the impedance between K and O. Distortion caused by irregular changes of the input signal can be estimated from t_o; t_o is the time interval in which U_o reaches the value U_{inp}.

$$t_0 = \frac{rC}{\kappa(1-h)-1} \ln \frac{\kappa-1}{\kappa h} = \delta rC. \qquad (14)$$

The effect of square-type pulse interferences has also been studied: The noise level attenuation caused by the limiter is

$$\theta = \frac{U_{n\,ex}}{U_{n\,aus}} = \frac{1-K_n(1-h)}{K_n h}. \qquad (19) \qquad (19),$$

K_U denotes the transmission coefficient of the stage for the envelope of the interference pulse. The following expression is obtained for a group of nearly blending pulses:

$$T_n' = \frac{rC'}{K(1-h)-1} \ln \frac{\frac{1}{K}-1+h-\lambda h}{\xi|1-K(1-h)|-\lambda h}. \qquad (20),$$

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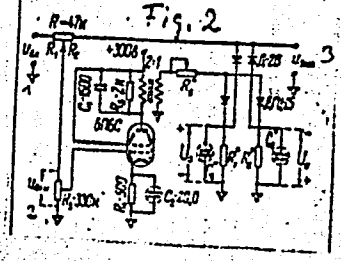
where T'_n is the pulse duration. Tests with such a circuit yielded a significant improvement of radio reception. The effectiveness has been increased with an added spectrum converter. The final selection of limiter elements has to be done experimentally. These elements have an asterisk in Fig. 2. The author thanks D. V. Agéyev. There are 11 figures and 4 Soviet-bloc references.

SUBMITTED: April 11, 1960 (initially)
August 5, 1960 (after revision)

Fig. 2



Legend to Fig. 2:
1) U_{inp}; 2) U_{inpC};
3) U_{outp}

Card 5/6

6.4400

25522 S/108/61/016/008/004/006
D280/D304

AUTHORS: Gorbachev, A.A. and Vinogradov, M.I., Members of Society (See Association)

TITLE: Application of the signal extrapolation method in pulse interference suppression

PERIODICAL: Radiotekhnika, v. 16, no. 8, 1961, 48-53

TEXT: The present article gives a description of a simple arrangement which makes possible the blocking of the LF end of the receiver for the duration of interference and also permits the extrapolation of the signal using two or three terms of the polynomial in (Eq. 1). Some experimental results are also given which illustrate the degree of distortion of the extrapolated signal. Figs. 1 and 2 show the bloc and circuit diagrams of the arrangement in which the extrapolation of signal is carried out using two terms only of the polynomial (1). The wanted signal, after being differentiated by R_1 and C_1 is applied to the grid of a cathode follower T_1 and from R_3 is applied to a gating cct consisting

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of diodes D_1, D_2, - and of the controlling tube T_2. With no interference T_2 is cut off, the signal charges the 'memory' capacitor C_3 which does not unduly affect the HF components because of the low output impedance of the cathode follower and of the diodes D_1 and D_2. The operating point of the diodes chosen on linear parts of their characteristics, is obtained by passing an additional d.c. current from source E_{a2}. From C_3 the signal goes on to an integrating network R_5 and C_4; so that R_1C_1 and R_5 are so chosen so as to assure the equalization of the frequency response and when interference is not present the extrapolated signal is transmitted without distortion. When at an instant-to-interference appears (Fig. 3a) its pulse, is applied with some phase load t_1 to a shaping network (one shot multivibrator on tube T_3). The resulting rectangular pulse with duration τ_o makes the tube T_2 conducting, the resultant voltage drop across R_4 cuts off diodes D_1 and

D_2, their internal resistance increases and C_3 is in effect disconnected from load R_3 of the cathode follower. The resultant increase in the time constant of the discharge of C_3 permits the retention of the signal for the duration of the interference pulse (Fig. 3b). After the end of the blocking pulse diodes D_1 and D_2 start conducting and C_3 rapidly charges to the potential of the signal, the integrating network R_5C_4 restores the signal to its original shape, except for time τ_o during which it is replaced by a section of a straight line, corresponding to the derivative of the signal (Fig. 3c). The cct is balanced by R_4. The amplitude and duration of the blocking signal are adjusted by potentiometers R_{11} and R_{12}. 6H3П (6N3P) double triodes were used. The diodes used were either semiconductor diodes ДГЦ27 (DG-Ts27) or thermionic diodes 6x2П(6Kh2P). The frequency response of the - extrapolating circuit is flat within 6 db from 100 to 7000 c/s. The amplitude response is linear for input signal range 0-30 volts, with distortion less than 1.5%. The overall gain is 0.03. The noise level at the output

is 60 to 70 db below maximum signal at the interference repetition frequency f_n = 100 ÷ 5000c/s, the ''seeping through'' of the interference during time τ_o is practically zero. From circuit data the interference suppression should not be less than 60 db for DG-Ts27 and 70 db for 6Kh2P. The duration of the blocking pulse can be varied from 40 to 500 microsecond. For extrapolation using one term of the polynomial - C_3 was replaced by a resistance of 6.2 k/ohm, with the addition of one differentiating cct at the input and of one integrating at the output. In extrapolating a speech with a variable frequency f_n and τ_o the following was established. 1) The extrapolation does not introduce any noticeable speech distortion for $\tau_o < 50$ microsec., $f_n < 600 \div 800$ c/s and $f_n > 6000 \div 8000$ c/s. For $f_n \approx 600 \div 6000$ c/s distortions are noticeable but not unbearable. 2) for $\tau_o > 50$ microsec. distortions distinctly increase but signal is still understandable to a variable extent. The signal ceases to be understandable at $f_n > 1200$ c/s for n=1, at $f_n > 1000 \div$

Card 4/6

1200 c/s for n = 2 and at f_n 600 ÷ 800 c/s for n = 3. With impulsive interference at the input for its effective suppression (30 ÷ 40 db with respect to the signal) the required τ_o = 400-500 microsec. for 10 to 20 ratio of the interference to signal at the input. It is stated in conclusion that the method described can be applied to radiotelephony where the quality of reproduced signal can be rather poor. There are 6 figures and 3 Soviet-bloc references.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (Scientific and Technical Society of Radio and Electrical Communications im. A.S. Popov) [Abstractor's note: Name of association taken from first page of journal]

SUBMITTED: September 24, 1960

Card 5/6 (Legend to Fig. 1 see next card)

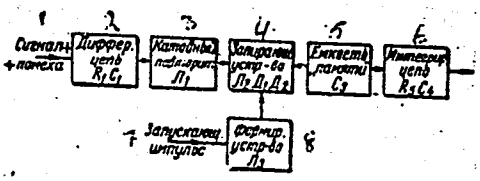

Fig. 1

GORBACHEV, A.A., kand.tekhn.nauk (g.Gor'kiy); RODIONOV, Ya.G., kand.-tekhn.nauk (g.Gor'kiy)

Method for increasing the interference rejection of multichannel high-frequency telephone systems. Vest. sviazi 21 no.1:13-14 Ja '61. (MIRA 15:5)

(Telephone)

GORBACHEV, A.A.; VINOGRADOV, M.I.

Concerning the use of an image signal extrapolation method for suppressing impulse interference. Elektrosviaz' 16 no.12: 69-71 D '62. (MIRA 16:1)
(Radio--Interference) (Radiotelephone)

GORBACHEV, A.A.

Increase in the interference rejection of AM radio signal reception using nonlinear feedback in the high-frequency section of the receiving devices. Radiotekhnika 18 no.2: 37-42 F '63. (MIRA 16:4)

1. Deystvitel'nyy chlen Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi imeni Popova.
(Radio—Interference)
(Radio—Receivers and reception)

ACCESSION NR: AT4019308 S/0000/63/003/001/0155/0159

AUTHOR: Gorbachev, A. A.; Polukhin, Yu. M.; Ravich, A. M.; Yusim, L. M.

TITLE: Optical investigations of photosensitive glasses

SOURCE: Simpozium po stekloobraznomu sostoyaniyu. Leningrad, 1962. Stekloobraznoye sostoyaniye, vy*p. 1: Katalizirovannaya kristallizatsiya stekla (Vitreous state, no. 1: Catalyzing crystallization of glass). Trudy* simpoziuma, v. 3, no. 1. Moscow, Izd-vo AN SSSR, 1963, 155-159

TOPIC TAGS: glass, photosensitivity, photosensitive glass, glass optical property, lithium aluminosilicate, image formation, absorption spectrum, luminescence spectrum, crystallization center

ABSTRACT: The mechanism of image formation in photosensitive glasses of the lithium aluminosilicate system and the kinetics of the formation of crystallization centers were investigated. The following optical characteristics were studied: the absorption spectra of irradiated, nonirradiated, and thermally-treated glasses; the relationship between the absorption of glasses and temperature under continuous heating of the sample; the thermoluminescence, and the luminiscence spectra of irradiated and nonirradiated glasses depending on the temperature of thermal treatment. Absorption spectra for glass 2L depending on the thermal treatment and

Card 1/2