L 57523-65
ACCESSION NR: AR5013007

parts. It was found that motors with vertical rolls with a power of 4000-4500 hp may be installed on new mills. This will make rolling without side passes possible with intense compression of the side edges of slabs in the vertical rolls and will improve the quality of the rolled product. The investigations have not exhausted the possibilities of the 1150 mill. N. Yudina.

SUB CODE: IE, MM   ENCL: 00

Card 2/2

ANDRONOV, I.K., professor; BEREZANSKAYA, Ye.S.; GLAGOLEV, N.S.; DEPMAN, I.Ya.,
        professor; ZOLOTOVITSKIY, Ye.M.; IL'IN, A.Ye., dotsent; LIAPIN, S.Ye.,
        MULYARCHIK, M.Z., uchitel'; PETRAKOV, I.S.; CHICHIGIN, V.G.

        Aleksandr Nikolaevich Barsukov. Mat. v shkole no.1:72-74 Ja-F '57.
                                                (MIRA 10:2)

        1. Moskovskiy oblastnoy pedagogicheskiy institut (for Andronov).
        2. Zaveduyushchiy kafedroy metodiki matematiki Moskovskogo pedago-
        gicheskogo instituta imeni V.I. Lenina (for Berezanskaya). 3. Metodist
        Shcherbakovskogo rayona goroda Moskvy (for Glagolev). 4. Leningrad-
        skiy pedagogicheskiy institut (for Depman). 5. Metodist Balashikhin-
        skogo rayona Moskovskoy oblasti (for Zolotovitskiy). 6. Moskovskiy
        pedagogicheskiy institut imeni V.I. Lenina (for Il'in. 7. Zaveduyu-
        shchiy kafedroy metodiki matematiki Leningradskogo pedagogicheskogo
        instituta imeni A.I. Gertsena (for Lyapin). 8. Shkola No.29 goroda
        Moskvy (for Mulyarchik). 9. Zaveduyushchiy kabinetom matematiki Mo-
        skovskogooblastnogo instituta usovershenstvovaniya uchiteley (for
        Petrakov). 10. Zaveduyushchiy kafedroy metodiki matematiki Moskov-
        skogo pedagogicheskogo instituta imeni V.P. Potemkina (for Chichigin).
                (Barsukov, Aleksandr Nikolaevich, 1891-)

CHICHIGIN, Vasiliy Grigor'yevich; PRINTSEV, V.V., dotsent, retsenzent; LAPIN, zasluzhennyy uchitel', retsenzent; STAL'KOV, G.A., retsenzent; ZETEL', S.I., dotsent, retsenzent; KARASEV, P.A., dotsent, retsenzent [deceased]; DUBNOV, Ya.S., prof., retsenzent [deceased]; PAZEL'SKIY, S.V., red.; TATURA, G.L., tekhn.red.

[Method for teaching geometry; plane geometry. Textbook for high-school teachers] Metodika prepodavaniia geometrii; planimetriia. Posobie dlia uchitelei srednei shkoly. Moskva, Gos.uchebno-pedagog. izd-vo M-va prosv.RSFSR, 1959. 391 p.   (MIRA 13:3)
               (Geometry--Study and teaching)

CHICHIK, NIKOLAY OSKAROVICH

N/5
611.6
.C5

CHICHIK, NIKOLAY OSKAROVICH

Elektronnyye umnozhiteli (Electronic multipliers, by)

N. O. Chechnik (1 Dr.) Moskva, Gostekhizdat, 19

    v. illus., diagrs., tables.

    Includes bibliographies.

    Lib. has: 1954
               1957 (2d. ed.)

MEA

MINSKIY, I.A.; BORISENKO, N.F.; CHICHIKALO, D.I.

Pay proper attention to preventive sanitary inspection. Vrach. delo
no. 1:100-101 '61.   (MIRA 14:4)

1. Cherkasskaya oblastnaya sanitarno-epidemiologicheskaya stantsiya.
            (CHERKASSY PROVINCE--PUBLIC HEALTH)

CHICHIKALYUK, A.V.,insh.

Abating the noise in reducing gears. Vest.mash. 40 no.10:43 0'60.

(MIRA 13:10)

(Gearing)   (Noise)

CHICHIKALYUK, A.V., inzh.

Detecting sources of vibration and noise in a pump. Vest.mashinostr.
42 no.9:34-36 S '62.   (MIRA 15:9)
                    (Pumping machinery—Vibration)

94-4-3/25

CHICHIKANOV, V.S.

AUTHORS: Alikhanyan, A.I., Engineer, Grigoryan, L.A., Candidate of Technical Sciences, and Chichikanov, V.S., Engineer.

TITLE: Automatic Field-forcing for Synchronous Motors (Avtomaticheskoye perevozbuzhdeniye sinkhronnykh dvigateley)

PERIODICAL: Promyshlennaya Energetika, 1958, Vol.13, No.4, pp. 8 - 10 (USSR).

ABSTRACT: Ordinarily, power-factor control by synchronous motors necessitates constant attendance of the operating staff. The authors have proposed a circuit for controlling the field of a synchronous motor automatically according to the load current. Maximum use of the available free power of the synchronous motor is thus assured. The circuit is based on electro-magnetic control of the field current by a saturating choke to maintain a given stator current. The reactive power delivered to the circuit is mainly limited by the maximum permissible stator current and maximum permissible field current. When the load changes, the regulator acts on the excitation to maintain the stator current constant. A limit is placed on the action of the regulator to prevent excessive field currents at small loads. The circuit of the regulator is given in Fig.1 and uses an amplidyne with negati

Card1/2

feed-back. The principles of operation of the circuit are explained. Fig. 2a gives curves of the relationship between the control current in windings 1 and 2 of the amplifier as a function of the stator current. The amp-turns of windings 1 and 2 are opposed to one another; therefore, the control amp-turns of the amplifier are determined by the difference between the amp-turns of windings 1 and 2. Fig. 2b shows a curve of the control amp-turns as function of the stator current and Fig. 3 relates the output main current to the control amp-turns. The regulator output is cross-connected to the field circuit. As the stator current falls, the control amp-turns become negative, which induces the working current of the amplifier and so increases the field current. As will be seen from Fig.1, the circuit ensures field-forcing if the output terminals of the intermediate relay are connected in parallel with the output terminal of the amplifier at appropriate points of the diagram. It is claimed that the regulator is reliable, has no moving parts or sliding contacts, and can be readily constructed. It would be advisable to organise industrial production of these regulators. There are 3 figures.

Card2/2

AVAILABLE: Library of Congress

CHICHIKIN, Petr Andreyevich; DURASOV, A.A., red.; ALEKSEYEVA, T.P., red.;
PERLOV, P.V., tekhn.red.

[Cheboksary] Cheboksary. Cheboksary, Chuvashskoe gos.izd-vo,
1960. 100 p.   (MIRA 13:11)
                        (Cheboksary)

L 04267-67   EWT(m)/T   DJ

ACC NR: AP6013315   (A)   SOURCE CODE: UR/0413/66/000/008/0134/0134

AUTHORS: Drong, I. I.; Pritsker, P. Ya.; Kustanovich, S. L.; Vakher, V. I.; Bogdanov,
S. A.; Kaloyev, A. V.; Chichikov, G. L.; Stetsenko, V. V.; Vitkevich, V. B.

ORG: none

TITLE: Hydraulic amplifier for a steering mechanism of a machine on wheels. Class
63, No. 180965

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 8, 1966, 134

TOPIC TAGS: hydraulic device, hydraulic equipment, hydraulic pressure amplifier,
VEHICLE COMPONENT

ABSTRACT: This Author Certificate presents a hydraulic amplifier for a steering
mechanism of a machine on wheels. The amplifier is built into the steering mechanism
and is connected to the steering shaft. It contains a lead element in the form of a
screw, a power cylinder (with its shaft connected to a spline attached to a sector of
the steering mechanism), and a distributor. The latter consists of a casing fixed on
the gear box of the steering mechanism. The casing contains ducts leading to the
working interior of the power cylinder and to its pressure and outflow pipes. A
cylindrical valve placed in the casing is located on the steering shaft, while two
stops limit the axial displacement of the steering shaft. To provide for the indica-
tion of gauge reading of the automatic steering augmented by hand steering, a
distributing sleeve (which slides in respect to the cylindrical valve and to the

Card 1/2   UDC: 629.113-522.5

1. C42É7-67

ACC NR: AP6013315

casing) is placed in the body of the distributor concentrically with the valve. The sleeve contains openings for passing of liquid and is motivated by plungers placed in the casing and connected to the gauge of automatic steering. These plungers interact with the face surfaces of washers contacting the sleeve. The washers serve as supports limiting the displacement of the sleeve in the casing (see Fig. 1).
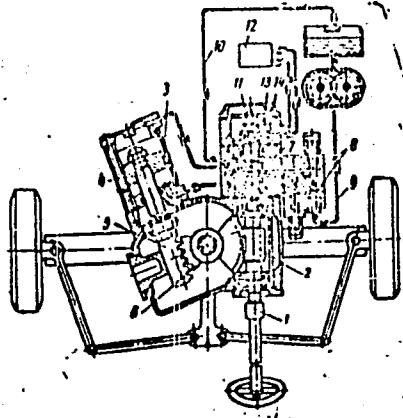
Fig. 1. 1 - steering shaft; 2 - screw;
3 - power cylinder; 4 - shaft of the
power cylinder; 5 - spline; 6 - sector
of the steering mechanism; 7 - distributor
body; 8 - valves; 9 - pressure duct; 10 -
overflow duct; 11 - cylindrical valve;
12 - automatic steering gauge; 13 - slid-
ing sleeve; 14 - plungers

The working displacement of the sleeve (limited by the washers) is smaller than the working displacement of the valve. Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 14Apr62
Card 2/2

YAKOVLEV, Nikolay Vasil'yevich; CHICHIKOV, N.V., red.; GROMOV, A.S.,
tekhn. red.

[Operation of refrigerating systems]Ekspluatatsiia kholo-
dil'nykh ustanovok. Moskva, Gostorgizdat, 1962. 144 p.
(MIRA 15:9)
(Refrigeration and refrigerating machinery)

CHICHIKOV, Vasiliy Mikhaylovich; PAKHOMOVA, I.V., otv. red.;
MARKOVICH, S.G., tekhn. red.

[Rebelling land; travels and meetings] Buntuiushchaia zemlia;
puteshestviia i vstrechi. Moskva, Gos.izd-vo detskoi lit-ry
M-va prosv. RSFSR, 1961.   155 p.   (MIRA 15:1)

1. Korrespondent "Pravdy" (for Chichikov).
        (Latin America--Description and travel)

N 5
740.14
.C51

CHICHIKOV, YU   M

Walzwerkswesen. Berlin, Technik, 1954.

467 p. illus., diagrs., tables.

Translation from the Russian: "Prokatnoye proizvodstvo," Moscow, 1952.

Added T.-P. in Russian.

"Quellennacweis": p. 449-451

SINITSYN, A.F.; LOSKUTOV, A.I., inzh.; CHICHILANOV, M.T., slesar'

Measure for eliminating the melting of contacts of a quick-break
switch on electric locomotives. Elek. i tepl. tiaga no.1:18
Ja '61.   (MIRA 14:3)

1. Master apparatnogo tsekha depo Zlatoust (for Sinitsyn).
   (Electric locomotives—Electric equipment) (Electric switchgear)

VESELOV, S.I.; GUSHCHINA, N.; MAKUSHKIN, L.G.; RULINA, L.B.; CHICHILO, I.K.;
SHABUNIN, Ye.M.; CHILIKIN,M.G., prof.; YUSHKOV, S.B.; GOSIS, I.N.;
RYABTSEV, N.I.; KRUPOVICH, V.I.; PETROV, N.I.: PATARUYEV, A.D.;
BEYRAKH, Z. Ya., doktor tekhn. nauk

Twenty-first anniversary of the publication "Promyshlennaia
energetika". Prom. energ. 21 no. 1:5-7 Ja '66   (MIRA 19:1)

1. Nachal'nik Gosudarstvennoy inspektsii po energeticheskomu
nadzoru Ministerstva energetiki i elektrifikatsii SSSR (for
Veselov). 2. Moskovskoye pravleniya nauchno-tekhnicheskogo
obshchestva energeticheskoy promyshlennosti (for Gushchina).
3. Predsedatel' Sverdlovskogo pravleniya Nauchno-tekhnicheskogo
obshchestva energeticheskoy promyshlennosti (for Makushkin).
4. Glavnyy energetik Pervogo gosudarstvennogo podshipnikovogo
zavoda (for Chichilo). 5. Glavnyy energetik Moskovskogo me ll-
lurgicheskogo zavoda 'Serp i molot'" (for Shab in). 6. Rektor
Moskovskogo energeticheskogo instituta (for Chilikin). 7. Glavnyy
inzhener instituta Tyazhpromelektroproyekt (for Krupovich).
8. Glavnyy konstruktor Moskovskogo zavoda teplovoy avtomatiki
(for Beyrakh).

CHICHILO, I. K.   PA 35/49T34

USSR/Engineering   Jan 49
    Steam Engineering
    Fuel Conservation

"Utilization of Steam of Revaporized Condensate,"
I. K. Chichilo, K. E. Vtorov, Engineers, First GPZ,
1 p

"Prom Energet" No 1

Diagram and operation of arrangement for utilizing
revaporization of the condensate, which resulted in
saving 10,000 megacalories of heat energy per year
in a bus-bar factory.

35/49T34

CHICHILO, I. K.

    "High-Frequency Current Inductive Heating of Steel Bars Utilized for Stamping
Ball Bearings," Prom. Energet., No 8, 1949.

Engr., First State Bearing Factory imeni L. M. Kaganovich.

1. CHICHILO, I.: OVECHKIN, V. [K.]

2. USSR (600)

4. Electric Power

7. Rational consumption of electric energy.
   Za ekon. mat. No. 3, 1952.

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

Chichilo, I. K.

CHICHILO, I.K. insh.

First Soviet ball bearing plant. Prom.energ.12 no.11:32-34
N '57.   (MIRA 10:12)
(Bearing industry)

YERMOLAYEV, Konstantin Pavlovich; BABUSHKIN, Aleksey Zakharovich;
CHICHILO, I.K., inzh., retsenzent; KUNIN, P.A., inzh., red.;
SMIRNOVA, O.V., tekhn.red.

[Electromagnetic and magnetic plates for metal-cutting machines;
manufacture, use, and repair] Elektromagnitnye i magnitnye
plity metallorezhushchikh stankov; proizvodstvo, ekspluatatsiia
i remont. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry,
1959. 106 p.   (MIRA 12:4)
            (Cutting machines)   (Magnets)

AKULOV, Ye.F., red.; IVANOV, N.I., red.; KIREYEV, M.I., red.; KNYAZEV,
     P.I., red.; CHICHILO, I.K., red.; ZHITNIKOVA, O.S., tekhn.red.

     [Regulations for the technical operation and safe maintenance of
     electric installations in industrial enterprises; compulsory for
     industrial enterprises of economic councils ministries and depart-
     ments] Pravila tekhnicheskoi ekspluatatsii i bezopasnosti obsluzhi-
     vaniia elektroustanovok promyshlennykh predpriiatii; obiazatel'ny
     dlia promyshlennykh predpriiatii sovnarkhozov, ministerstv i ve-
     domstv. Izd.2., stereotipnoe. Utverzhdeny 10 fevralia 1961 g. Mo-
     skva, Gosenergoizdat, 196?   267 p.   (MIRA 15:7)

     1. Russia (1923- U.S.S.R.) Glavnoye energeticheskoye upravleniye.
               (Electric engineering--Safety regulations)

KOLESOV, D.S., inzh., otv. za vypusk; CHUMAKOV, N.M., red.; KIREYEV,
    M.I., red.; AKULOV, Ye.F., red.; IVANOV, N.N., red.; KNYAZEV,
    P.I., red.; CHICHILO, I.K., red.; VOROTNIKOVA, L.F., tekhn.
    red.

[Safety regulations for operating and servicing the electric
power systems of industrial enterprises; obligatory for
industrial enterprises, economic councils, ministries, and
governmental agencies] Pravila tekhnicheskoi ekspluatatsii i
bezopasnosti obsluzhivaniia elektroustanovok promyshlennykh
predpriiatii; obiazatel'ny dlia promyshlennykh predpriiatii
sovnarkhozov, ministerstv i vedomst. Utverzhdeny 10 fevralia
1961 g. Moskva, Vses.izdatel'sko-poligr. ob"edinenie M-va pu-
tei soobshcheniia, 1962. 349 p.   (MIRA 15:4)
1. Russia(1923- U.S.S.R.)Glavnoye energeticheskoye upravleniye.
           (Electric power distribution—Safety regulation)

CHUMAKOV, N.M., red.; KIREYEV, M.I., red.; AKULOV, Ye.F., red.;
    IVANOV, N.N., red.; KNYAZEV, P.I., red.; CHICHILO, I.K.,
    red.; KRYLOV, A.G., red.; GLUSHKO, G.I., tekhn. red.

    [Safety engineering regulations for operating and servicing
    electrical systems of industrial enterprises required for
    the industrial plants of economic councils, ministries, and
    departments]Pravila tekhnicheskoi ekspluatatsii i bezopasnosti
    obsluzhivaniia elektroustanovok promyshlennykh predpriiatii;
    obiazatel'ny dlia promyshlennykh predpriiatii sovnarkhozov,
    ministerstv i vedomstv. Utverzhdeny 10 fevralia 1961 g. Mo-
    skva, Dnepropetrovskoe knizhnoe izd-vo, 1962. 279 p.
                                                (MIRA 16:3)
    1. Russia (1923- U.S.S.R.)Glavnoye energeticheskoye upravle-
    niye.
              (Electric power distribution--Safety regulations)

CHUMAKOV, N.M., red.; KIREYEV, M.I., red.; AKULOV, Ye.F., red.;
        IVANOV, N.N., red.; KNYAZEV, P.I., red.; CHICHILO, I.K.,
        red.; MEL'NIK, V.D., red.

        [Safety engineering and operation regulations for the
        maintenance of the electrical systems of industrial
        enterprises; mandatory for industrial enterprises, eco-
        nomic councils, ministries, and enterprises] Pravila
        tekhnicheskoi ekspluatatsii i bezopasnosti obsluzhiva-
        niia elektroustanovok promyshlennykh predpriiatii; obia-
        zatel'ny dlia promyshlennykh predpriiatii sovnarkhozov,
        ministerstv i vedomstv. Dnepropetrovsk, Izd-vo "Promin",
        1964. 305 p.   (MIRA 18:2)

        1. Russia (1923- U.S.S.R.) Glavnoye energeticheskoye
        upravleniye.

CHUMAKOV, N.M., red.; KIREYEV, ".I., red.; AKULOV, Ye.F., red.;
    IVANOV, N.N., red.; KNYAZEV, P.I., red.; CHICHIIO, I.K.,
    red.; MEL'NIK, V.D., red.

[Regulations for operating and safety measures in servicing
the electrical systems of industrial enterprises; mandatory
for industrial enterprises of regional economic councils,
ministries, and departments] Pravila tekhnicheskoi ekspluata-
tsii i bezopasnosti obsluzhivaniia elektroustanovok pro-
myshlennykh predpriiatii; obiazatel'ny dlia promyshlennykh
predpriiatii sovnarkhozov, ministerstv i vedomstv.
Dnepropetrovsk, Izd-vo "Promin'," 1965. 257 p.
                                            (MIRA 18:8)
1. Russia (1923- U.S.S.R.) Glavnoye energeticheskoye upravle-
niye.

CHICHIN, KH. G.

Collection of complete papers presented at the 1959 Kazan Conference on Chemistry of Organophosphorus Compounds.

CHICHIN, M. I.

CHICHIN, M. I.: "The grow'' conditions and productivity of linden
    groves in the Belorussian SSR." Min Higher Education USSR.
    Belorussian Forestry Engineering Inst S. M. Kirov. Minsk,
    1956.
    (Dissertation for the Degree of Candidate in Agricultural Sciences).

SO: Knizhnaya letopis', No 23, 1956

USSR / Forestry. General Problems.   K

Abs Jour   : Ref Zhur - Biologiya, No 18, 1958, No. 82173

Author   : Chichin, M. I.
Inst   : Not given
Title   : Belorussian Linden Groves

Orig Pub   : Kolkhoznik Belorussii, 1956, No 10, 29

Abstract   : No abstract given

Card 1/1

10

CHICHIN, M.I.

Arboretum of the Zhornovka Forest Experiment Station. Bot.;
issl.Bel.otd.VBO no.7:226-232 '65.

(MIRA 18:12)

1. A. V. CHICHINADZE, Eng.

2. USSR (600)

4. Brakes

7. Expanded seminars on problems of increasing the wear resistance of braking and friction assemblies of machines. Vest. mash. 32 no. 11. 1952.

9. Monthly List of Russian Accessions, Library of Congress, ____April____ 1953, Uncl.

CHICHINADZE, A. V.

"Investigation of Temperature Fields of Some Dry Friction Areas." Cand
Tech Sci, Inst of Machine Sci, Acad Sci USSR, Moscow, 1954. (KL, No 1, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher
Educational Institutions (12)
SO: Sum. No. 556, 24, Jun 55

Chichinadze, H.V.

KRAGEL'SKIY, I.V.; CHUPILKO, G.Ye; CHICHINADZE, A.V.; KUDASHEV, A.I.,
       redaktor; ASTAF'YEVA, G.A., tekhnicheskiy redaktor.

   [Friction processes in airplane wheel brakes. Selection of frictional
   pairs] Protsessy treniia v tormozakh aviakoles.Podbor friktsionnykh par.
   Moskva, Izd-vo Akademiii nauk SSSR, 1955. 189 p.   (MIRA 9:4)
                (Airplanes--Landing gear) (Brakes)
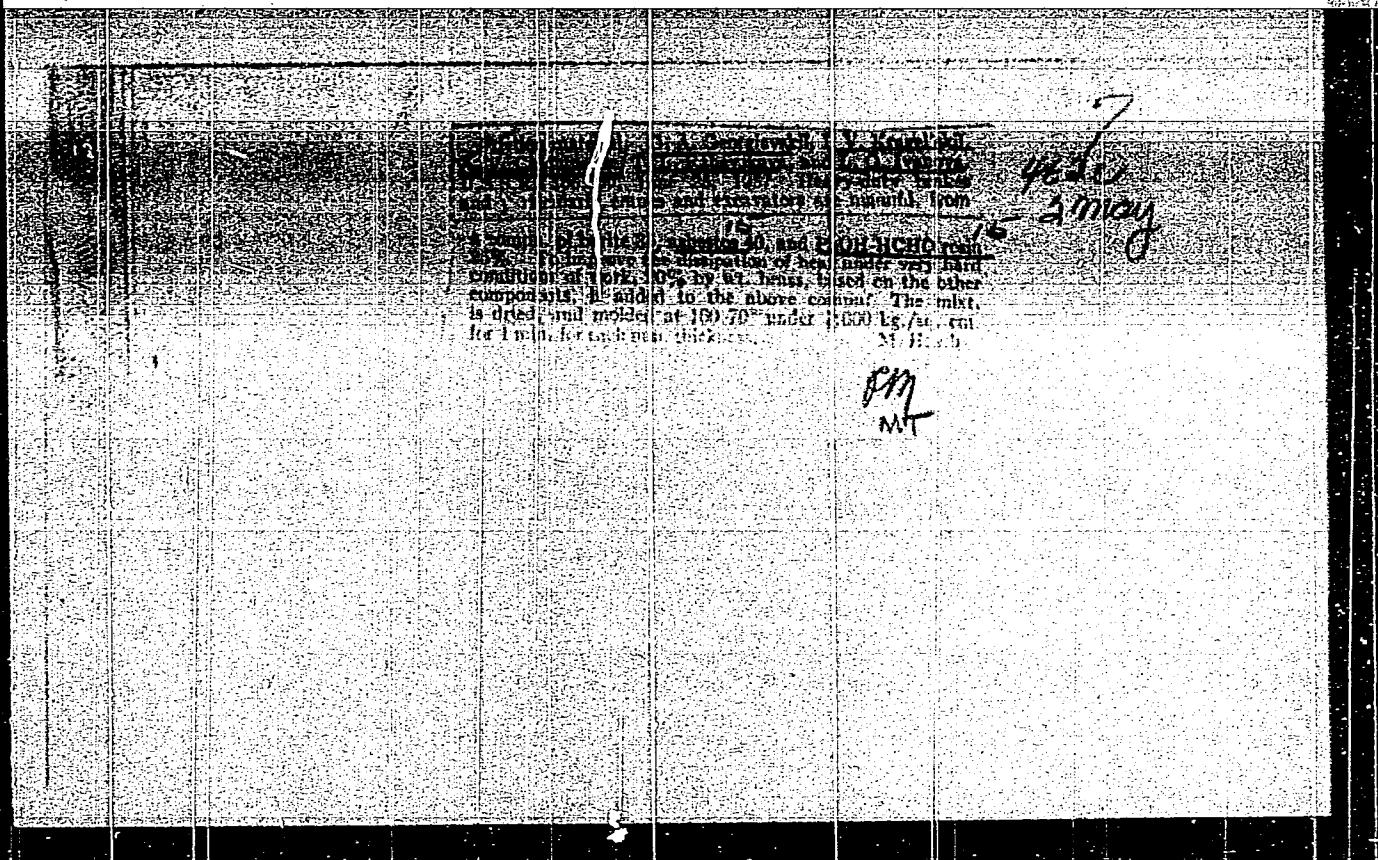
Pressed friction materials. G. A. Georgievskii, L. V. Kraseľskii, A. V. Chichinadze, T. L. Rzhevskaya, and G. Ivarova. U.S.S.R. 107393. ... and brakes for heavy work, particularly for cranes ... diggers, are made of asbestos 40, barytes 35, and a mould of PhOH-HCHO resin ... soln. in Me₂CO 25%. The components are thoroughly mixed, dried, and molded at ... 70° under 300 kg./sq. cm. pressure, holding for 1 min. for each mm. of thickness. Cf. C.A. 51, 11042i.

M. Hosell

... involving ... in a ... V. Krotkanski.
... conductive Sb ... perto ... plate ... and ... of plate, disc and examples of amount from ... a ... pot ... mixture, and ... OH-HCHO resin ... having good dissipation of heat under very hard ... condition at ... of 2-10% by wt. mass, based on the other components, is added to the above contour. The mixt. is dried and molded at 150-170° under 1500 kg/sq. cm for 1 min. for each mm thickness.   M. Hirsch

15(8)   S/025/60/000/05/021/044
                                           D048/D006

AUTHOR: Chichinadze, A.V., Candidate of Technical Sciences

TITLE: "Retinaks"

PERIODICAL: Nauka i zhizn', 1960, Nr 5, p 63 (USSR)

ABSTRACT: Recently, a team of scientific workers and engineers
               headed by Professor I.V. Kragel'skiy, Doctor of Tech-
               nical Sciences, developed and introduced into in-
               dustry a new material - retinaks. It is a plastic
               which has a high wear-resistance and a constant
               friction coefficient in a temperature range between

               100 and 1000°. It does not cause much wear in me-
               tal drums and disks, does not ignite or give off
               dust and smoke. Due to these qualities it is widely used
               in many fields. Soviet "TU-104", "TU-114" and
               "IL-18" air liners are equipped with retinaks which
Card 1/2   lengthens the working life of their brakes by 4-5

"Retinaks"

S/025/60/000/05/021/044
D048/D006

times. It has proved to be extremely effective in the brakes of travelling excavators and oil drilling hoists. Due to its resistance to bacteria, the material is used under various climatic and atmospheric conditions at environmental temperatures of -60 to +100°. The use of retinaks in the national economy saves the country several 100 million rubles per annum. There is 1 drawing.

Card 2/2

Chichinadze A.V.

PHASE I BOOK EXPLOITATION   SOV/3604

Akademiya nauk SSSR. Institut mashinovedeniya

Povysheniye effektivnosti tormoznykh ustroystv. Svoystva friktsion-
nykh materialov. (Increasing the Efficiency of Braking Devices.
Properties of Friction Materials) Moscow, Izd-vo AN SSSR, 1959.
183 p. Errata slip inserted. 1,800 copies printed.

Resp. Ed.: V.S. Shchedrov, Doctor of Technical Sciences, Professor;
Ed. of Publishing House: P.M. Belyanin; Tech. Ed.: I.V. Polya-
kova.

PURPOSE: This collection of articles is intended for engineers and
scientific workers specializing in brakes and friction materials.

COVERAGE: The first group of articles deals with basic design
measures for increasing the life and efficiency of brakes; the
second group with problems related to the development and fields
of application of new friction materials; the third group with
testing methods and the results of investigations of friction
pairs and brakes; and the fourth group with the design of brakes
and calculation data. No personalities are mentioned. References
accompany most of the articles.

PART III. METHODS OF TESTING AND INVESTIGATING
           FRICTION PAIRS AND BRAKES

Levental'n, O.Ju. Methods of Inspection Testing of Brake Linings
for Automobiles.
    This article deals with the development of a method and equip-
ment for testing automobile brake linings under conditions
close to those during actual operation.   121

Zubciizin, V.K. Testing Asbestos Friction Materials by the Model-
ing Method
    The author describes the working principle of a newly developed
testing stand for determining the coefficient of friction, wear,
braking action, and the temperature regime of various types of
asbestos friction material.   130

Chichinadze, A.V. Laboratory Full-Scale Tests of the New FK-16l
Friction Material on a Evenly Loaded Brake
    The author gives experimental data on the above material de-
veloped at TsNIIII GSM and used on the full-scale drum of the Academy of Sciences
of the USSR on full-scale drum and disk-type brakes.   145

PART IV. DESIGNING BRAKES   159

Aleksandrov, M.P. Modeling in Designing and Calculating Braking
Devices
    The author describes the application of modeling to designing
brakes for freight-hoisting equipment, and the analytical
work involved in it.   159

Marochkin, V.N. and A.V. Chichinadze. Calculating Resistance Forces
in Disk Brakes
    The authors present a method of exact calculation of the ele-
ments of resistance, the friction force and torque of a sec-
tor-type brake shoe. The method can be also applied to any
other shape of the brake shoe.   170

Shchedrov, V.S., and A.V. Chichinadze. On the "Mutual Overlapping"
Coefficient (Ratio of friction surfaces of two bodies in sliding
contact)
    The authors discuss dependence of the coefficient of friction
and the rate of wear on the temperature gradient in the up-
layer close to the friction surface. They also discuss the de-
pendence of the three above-mentioned parameters and the fric-
tion surface temperature on the coefficient of mutual over-
lapping.   180

AVAILABLE: Library of Congress

Card 7/7   VK/ses/jb
                                                                    4-24-59

Translation from: Referativnyy zhurnal, Mashinostroyeniye, 1960, No. 20, p. 478,
113278

AUTHORS: Marochkin, V. N., Chichinadze, A. V.

TITLE: Calculation of the Resistance Forces in Disk Brakes

PERIODICAL: V sb.: Povysheniye effektivnosti tormozn. ustroystv. Svoystva frikts.
             materialov. Moscow, AN SSSR, 1959, pp. 170-179

TEXT: The calculation of the resistance forces is presented, which arise
from the friction in the disk brakes applied in the aviation. The existent
calculation methods are criticized.

V. O. S.

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

Chichinadze, A. V., Troyanovskaya, G. I., and Shchedrov, V. S.

"Effect of the Temperature Field on the Friction Characteristics and Simulation of the Friction Process." p. 245

Sukhoye i granichnoye treniye. Friktsionnyye materialy. (Dry and Boundary Friction. Friction Materials). Moscow, Izd-vo AN SSSR, 1960. 502 p. Errata slip inserted. 3,500 copies printed. (Series: Its: Trudy, v. 2)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Ed.: I. V. Kragel'skiy, Doctor of Technical Sciences, Professor; Ed. of Publishing House: K. I. Grigorash; Tech. Ed.: S. G. Tikhomirova.

The collection published by the Institut mashinovedeniya, AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines, April 9-15, 1958.

AUTHORS: Chichinadze, A. V., Candidate of Technical Sciences;
Kharach, G. M., Engineer

TITLE: Experience with retinaks in some machinery applications

PERIODICAL: Vestnik mashinostroyeniya, no. 1, 1961, 51 - 55

TEXT: Information is given on component elements of retinaks, its
properties, behavior and applications. It is since 2 - 3 years gradually re-
placing the old Soviet friction materials failing in heavy friction service.
17 Soviet publications are the information source. Its peculiar feature is a
plastic, resilient surface film. The components are barite, asbestos and resin
bond modified by colophony. Brass is added for heavy friction service. Resin
heated by friction reacts with barite, the ambient medium and the counterbody
in friction contact, and brass reacts with barite forming sulfurous compounds.
The surface film maintains constant volume in a wide temperature range. The
ФК-24 A (FK-24A) retinaks is made of asbestos, ground barite and a solution of
modified phenol-formaldehyde resin. Microscopic pores on the surface fill with

Card 1/4

S/122/61/000/001/008/015
A161/A130

Experience with retinaks in some ....

plastic wear products under the effect of friction and heat, as well as with particles of softened metal. The softening point of metal must not exceed the friction heat to prevent metal from being pulled on the retinaks surface. FK-24A contains no brass and is designed for a lower friction heat range. The other grade mentioned, ФK-16Л (FK-16L) is FK-24A with 16% brass wire of 0.18 - 0.20 mm in diameter in 20 - 30 mm lengths. It is a grade for higher friction loads. Softening brass replaces the burning bond and absorbs some heat. Softened brass with barite and resin decomposition products forms a layer isolating the deeper layers from contact with the counterbody and working like a lubricant which forms from friction. Retinaks linings are fabricated similarly with other non-metallic materials worked by hot pressing, and its properties are controllable by application of different pressure and temperature. The physical and mechanical properties are:

	FK - 24 A	FK- 16 L
Compression strength limit, kg/cm²	1,300	900
Brinell hardness, kg/mm²	33	36
Bending strength limit, kg/cm²	--	600
Shear resistance, kg/mm²	4.8	2.5
Impact resistance, kg-m/cm²	--	13

Card 2/4

Experience with retinaks in some .....

	FK - 24 A	FK - 16 L
Density, g/cm³	1.82	2.25
Heat conductivity, Kcal/m · h · deg	0.53	0.57
Specific heat, Kcal/kg · deg	0.23	0.2
Thermal diffusivity, m²/h · 10³...........................	1.36	1.2
Water uptake, %	< 1	< 1

Retinaks is resistant to acids, alkali, nonpolar solvents, gasolin, oil, and
stable in the arctic and tropical climate. Tambovskiy zavod asbestovykh i rezi-
novykh tekhnicheskikh izdeliy (Tambov Asbestos and Rubber Technical Product Plant)
produces retinaks linings since 1959. The following applications are listed. A
friction clutch produced by Zavod mekhanicheskikh pressov (Mechanical Press Plant)
in Altay area; an electromagnetic ЭМ-153 (ETM-153) clutch with retinaks sectors
developed by ENIMS, and clutches under development for friction service for
500,000 kg-m and higher, destined for the use in steam power plants and expected
to decrease the required installed capacity of motors from 600 - 800 to 300 - 400
kw; brakes for aircraft wheels, walking excavators, oil drilling equipment. It
has been tested with success in automobile brakes, in tests organized in 1958
by the Ministerstvo avtomobil'nogo transporta i shosseynykh dorog Ukrainskoy SSR

Card 3/4

Experience with retinaks in some ....

S/122/61/000/001/008/015
A161/A130

(Ministry of Motor Transport and Highways of the Ukrainian SSR) and IMASh AS
USSR. The "Karbolit" Plant produces a retinaks grade for subway train brakes.
Other applications are expected. Its life is 6 - 8 times longer than that of
old friction materials in press clutches, more than three times longer in auto-
mobile brakes. (linings withstood 100,000 km), up to 15 times in a walking exca-
vator. The proper application range is for pressure up to 60 kg/cm^2 and sliding
speed up to 100 m/sec; dry friction heat must not exceed 1,200°C. Large-scale
tests are mentioned of old friction materials at Institut mashinovedeniya AN
SSSR (Institute of Science of Machines of the AS USSR) and Vsesoyuznyy nauchno-
-issledovatel'skiy institut asbotekhnicheskikh izdeliy (VNIIATI) (All-Union Scien-
tific Research Institute for Technical Asbestos Products), in which the materials
failed at much lower friction heat. The tested materials include non-Soviet
"Marion" smoking and failing at 650 - 700°C, "Cobra" at 450°C, "Bokau-Wolf" at
600°C. The Soviet 6-KB-10 (6KV-10) failed at 420°, 6KX-1 (6KKH-1) at 500°C.
FK-24A retinaks worked without coating with metal at 800 - 900°C in couple with
ferrous metal, and FK-16L at 1,100°C. There are 4 figures and 17 Soviet-bloc
references.

Card 4/4

CHICHINADZE, A.V.

Temperature field in a disk brake. Tren.i izn.mash. no.15:286-304
'62.   (MIRA 15:4)
(Brakes—Testing)

CHICHINADZE, A.V., kand. tekhn. nauk; BRAUN, E.D., inzh.

Simulated testing of the friction pairs of railroad brakes. Vest.
mashinostr. 44 no.8:32-36 Ag '64.

(MIRA 17:9)

BRAUN, E.D. (Moskva); CHICHINADZE, A.V. (Moskva); SMIRNOVA, R.G. (Moskva); BAYKOV, V.V. (Moskva)

Simulation of the braking process on the IM-58 friction machine.
Mashinovedenie no.2:105-115 '65.

(MIRA 18:8)

CHICHINADZE, A.V. (Moskva); LASOVSKAYA, L.B. (Moskva)

Using computers for calculating operating conditions of friction
brakes. Mashinovedenie no.5:101-108 '65.   (MIRA 18:9)

CHICHINADZE, A.V., kand.tekhn.nauk; BRAUN, E.D., inzh.

Inertia machine for full-scale testing of friction pairs. Vest. mashinostr. 45 no.3:48-50 Mr '65.

(MIRA 18:4)

CHICHINADZE, A.V. (Moskva); SIDORENKO, G.S. (Moskva)

Thermophysical parameters and the coefficients of heat flow
distribution used in calculating friction temperatures of
heat-resistant friction pairs. Mashinovedenie no.3:76-78
'65.   (MIRA 18:6)

KRAGEL'SKIY, I.V., doktor tekhn. nauk, prof., otv. red.;
        SHCHEDROV, V.S., doktor tekhn. nauk prof., otv. red.;
        RESHETOV, D.N., doktor tekhn. nauk, prof., otv. red.;
        CHICHINADZE, A.V., kand. tekhn. nauk, otv. red.;
        KNOROZ, M.M., red.

        [Theory of friction and wear] Teoriia treniia i iznosa.
        Moskva, Nauka, 1965. 364 p.   (MIRA 18:7)

CHICHINADZE, I. K.

CHICHINADZE, I. K.: "Author's abstract of a dissertation on ths subject of "New
and promising varieties of wheat". presented t oward the academic degree of
Candidate of Agricultural Science. Tbilisi, 1955. Publishing House of
the Georgian Agricultural Inst. Min Higher Education USSR. Georgian Order
of Labor Red Banner Agricultural Inst. (Dissertations for the degree of
Candidate of Agricultural Science.)

SO: Knizhnaya Letopis' No. 50   10 December.1955. Moscow.

Country   : USSR
Category   : Human and Animal Physiology, Blood

Abs. Jour.   : Ref Zhur - Biol., No. 2, 1959, No. 7949

              : Blinova A.; Dembo M.; Chichinadze K.
Institut.   : --
Title   : Blood Regeneration in Donors after Losing
                 Different Amounts of Blood.

Orig Pub.   : V sb.: Aktual'n. vopr. pereliv. krovi. Vyp. 5,
                 Leningrad, 1957, 3--6

Abstract   : The study was performed on 102 donors (11 men
                 and 91 women) aged 21 to 50. After 250--280
                 ml of blood was drawn rapidly from 20 donors
                 and 400--450 from 44 donors, blood tests, reti-
                 culocyte counts and thrombocyte counts were
                 performed. Blood was examined on the day
                 blood was drawn, two days later and every five
                 days thereafter for a period of one month.
                 When the blood was taken all at once, the
                 hemoglobin content was 1.5% lower than the
                 initial level; when the blood was taken frac-
                 tionally, it was 2.6% lower. The highest
Card: 1/2

			T
Country	:	USSR	
Categorys	:	Human and Animal Physiology, Blood	
Abs. Jour.	:	Ref Zhur. - Biol., No. 2, 1959, No. 7949	
Author	:		
Institut.	:		
Title	:		
Orig. Pub.	:		
Abstract	:	reticulocyte count was 21%; the average was 6%. The reticulocyte levels returned to normal on about the 25th day. Significant changes in white cell levels were not noted. After single-stage blood drawing the platelet count rose for the first few days and returned to its initial value 10 to 14 days later.--A.D. Zhuchkova	
Card:		2/2	

CHICHINADZE, K. I., Cand Med Sci -- (diss) "Growth changes in struc-
ture of the esophagus covering in man, especially regarding its epi-
thelial coat." Tbilisi, 1960. 16 pp; (Tbilisi State Medical Inst);
200 copies; price not given; (KL, 27-60, 160)

CHICHINADZE, L.S.

Case of placenta prolapse. Akush. i gig. 33 no.2:90 Mr-Ap '56.

(MIRA 9:7)

1. Iz Sukhumskogo rodil'nogo doma (glavnyy vrach Khubutiya, zaveduyushchiy roditel'nym otdeleniyem TSulukidze)
(PLACENTA)

CHICHINADZE, N.M.

CHICHINADZE, N.N., Cand Phys-Math Sci—(diss) "Certain problems of substantiation of mathematics." Tbilisi, 1958. 22 pp (Tbilisi State U im I.V. Stalin), 150 copies (KL,30-58,122)

-17-

CHICHINADZE, I.Ye.

Some problems in sprinkling slopes with long-jet devices. Soob. AN Gruz.
SSR 35 no.2:363-370 Ag '64.
(MIRA 17:12)

1. Gruzinskiy institut energetiki im. A.I.Didebulidze, Tbilisi. Sub-
mitted May 9, 1964.

CHICHINADZE, K.I.

Development of neural elements of the human alimentary canal during the embryonic period. Trudy Inst. eksp. morf. AN Gruz. SSR 8:139-149 '60.

(MIRA 14:10)

(ALIMENTARY CANAL—INNERVATION)
(EMBRYOLOGY, HUMAN)

CHICHINADZE, K.I.

Histological changes in the neural elements of the esophagus
following irradiation. Trudy Inst. eksp. morf. AN Gruz. SSR
10:171-187 '62.   (MIRA 16:6)
        (ESOPHAGUS—INNERVATION)
    (X RAYS—PHYSIOLOGICAL EFFECT)

CHICHINADZE, M. E., Candidate of Phys-Math Sci (diss) -- "Some problems in the principles of mathematics". Tbilisi, 1959. 22 pp (Tbilisi State U im Stalin), 150 copies (KL, No 22, 1959, 109)

ACCESSION NR: AP4041417   · S/0179/64/000/003/0071/0078

AUTHOR: Blyumin, G. D. (Moscow); Chichinadze, M. V. (Moscow)   ·

TITLE: Imperturbability conditions for a single rotor gyrocompass

SOURCE: AN SSSR. Izv. Mekhanika i mashinostroyeniye, no. 3, 1964, 71-78

TOPIC TAGS: gyrocompass, single rotor gyrocompass, pendulum gyrocompass, liquid torsional suspension gyrocompass, imperturbable gyrocompass, gyrocompass imperturbability analysis

ABSTRACT: Imperturbability is considered in relation to two types of single rotor gyrocompass. The latter is defined as imperturbable when the direction it indicates is determined totally by the velocity of the motion of its base in the terrestrial sphere, but is independent of accelerations of such motion. The considered types are a pendulum gyro-compass (see Fig. 1 in.the Enclosure) and a compass with a combined fluid-torsional method of suspension (see Fig. 2 in the Enclosure). Imperturbability of the former requires and is satisfied by the observation of equality $H=m/v$ in conjuction with the condition of perpendicularity of vectors H (angular momentum of gyrocompass sensor relative to its mass center) and I (a vector describing the location of the mass center relative to the point of support). For the fluid-torsional suspension, imperturbability requires satisfaction ·

Card 1/4

ACCESSION NR: AP4041417

of conditions

$$H = c_2 n_x v / g, \qquad P_1 l_1 = c_x n_z^2 + J v^2 \qquad (v^2 = g/R) \qquad (1)$$

where c_x is the torsional rigidity of the torsion suspension, n_x is a constant factor, v is the absolute velocity of the vehicle, P_1 is the gravitational attraction of the external sphere, l_1 is the distance from axis x to mass center of the external sphere, and J is the moment of inertia of the external sphere relative to axis y. The sustained oscillation period, during which the compass is imperturbable, is approximately equal to the Schuler period. Orig. art. has: 7 graphs and 21 numbered equations.

ASSOCIATION: none

SUBMITTED: 03Jan63   ENCL: 02

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

Card   2/4

ACCESSION NR: AP4041417

ENCLOSURE: 01

Figure 1.

3/4
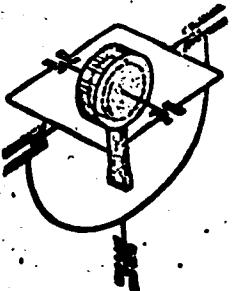
ACCESSION NR: AP4041417   ENCLOSURE: 02
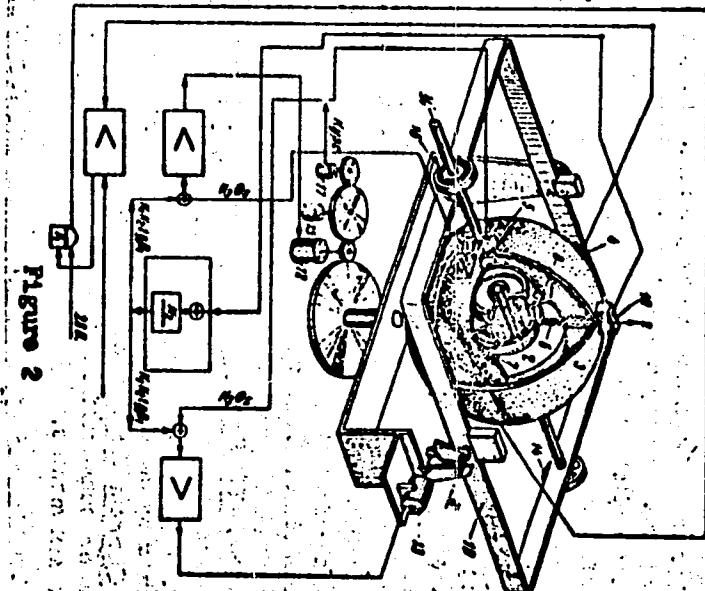
Figure 2

L 25325-65   EEC-2/EWT(d)/FBD/FSS-2/EEC(k)-2/EWG(j)/EEC-4/EEC(c)-2/EED-2/
FS(b)   Pn-4/Po-4/Pe-5/Pq-4/Pac-4/Pg-4/Ph-4/Pk-4/Pl-4/Pae-2   IJP(c)   BC/AES

ACCESSION NR: AP5002599   S/0179/64/000/005/0120/0123

AUTHORS: Blyumin, G. D. (Moscow); Chichinadze, M. V. (Moscow)

TITLE: Conditions of nonperturbation of a correcting single rotor gyrocompass

SOURCE: AN SSSR, Izvestiya. Mekhanika i mashinostroyeniye, no. 5, 1964, 120-123

TOPIC TAGS: gyroscope design, guidance R+D, spacecraft compass, spacecraft direction finder, gyrocompass

ABSTRACT: The authors summarized certain definitions, nomenclature, and conditions
describing the performance of gyrocompasses presented in their earlier report
(Usloviya nevozmushchayemosti odnorotornogo girokompasa, IAN. Mekhanika i
mashinostroyeniye, 1964, No. 3). In addition, a gyrocompass is defined as being
capable of correcting if it has moments which cancel its velocity deviation.
Expressions are given for forces of inertia of a pendulum in terms of the direction
cosines of a three-dimensional rectangular system and in terms of the absolute
acceleration of the craft, written as the vector equation $W = d^2r/dt + U \times v$. In the
equation, the vectors U and v are given by $v_1 = RU\cos\varphi + v_x,$ $U_1 = -v_x/R$
$$v_2 = v_y,$$ $$U_2 = U\cos\varphi + v_x/R$$
$$v_3 = 0,$$ $$U_3 = U\sin\varphi + (v_x/R)\operatorname{tg}\varphi,$$

Card 1/2

L 25325-65

ACCESSION NR: AP5002599   *O*

for the case of craft motion relative to the earth. Four variables are isolated as
expressed in the relationships $a^* = -\dfrac{U_1}{U_1 + c_z/H}$ $l_k = -\dfrac{HU_2}{c_x}$

$$s_x = -\frac{HU_2}{c_x} + n_x\frac{U_2v_1}{g}, \qquad z_1 = -a^* + n_z\frac{U_2v_1}{g} .$$

The authors state that external information about the four parameters is needed for
obtaining the correction moments of a craft. By ignoring secondary orders of magni-
tude and adopting certain approximations applicable to relevant cases, the authors
derived the simpler expressions $T_i = 2\pi\left(\dfrac{H}{c_z n_x U_2}\right)^{1/2}$ or $T_r = \dfrac{2\pi}{v}\mu$ $\left(\mu = \left[\dfrac{U_2 + c_z/H}{U_2}\right]^{1/2}\right)$,

as good approximations for the angles of curling torsion measured against the x and
z axes respectively. In conclusion, the authors note that the formulas are approxi-
mate and, as such, are only applicable in cases where Schuler's condition of non-
perturbation of a gyroscopic compass holds. Orig. art. has: 24 equations.

ASSOCIATION: none

SUBMITTED: 03Jan64   ENCL: 00   SUB CODE: NG

NO REF SOV: 002   OTHER: 000
Card 2/2

CHICHINADZE, N.A.

Intraorganic distribution of the arterial vessels of supra-
renal glands. Trudy Inst. eksp. morf. AN Grus. SSR. 10:
129-138'62.   (MIRA 16:6)
        (ADRENAL GLANDS—BLOOD SUPPLY)

CHICHINADZE, N.A.

Extraorganic arteries of suprarenal glands. Trudy Inst.
eksp. morf. AN Gruz. SSR 10:139-151'62.   (MIRA 16:6)
                (ADRENAL GLANDS—BLOOD SUPPLY)

CHICHINADZE, N.A.

Morphology of the venous system of the suprarenal gland. Trudy
Inst. eksp. morf. AN Gruz. SSR 10:299-312'62.   (MIRA 16:6)
     (ANDRENAL GLANDS--BLOOD SUPPLY)   (VEINS)

CHICHINADZE, N.K.

Vascular system of testicles. Trudy Inst. eksp. morf. 'N Gruz.
SSR 8:113-118 '60.   .rIRA 14:10)
         (TESTICLE-BLOOD VESSELS)

CHICHINADZE, N.K.

Microvascularization of seminal vesicles under normal and
experimental conditions. Trudy Inst. eksp. morf. AN. Gruz.
SSR 10:113-125'62.   (MIRA 16:6)
          (SEMINAL VESICLES—BLOOD SUPPLY)

CHICHINADZE, N.K.

Changes in ribo-and deoxyribonucleoproteins in experimental ischemia of seminal glands. Trudy Inst. eksp. morf. AN Gruz. SSR 10:269-282'62.
(MIRA 16:6)
(TESTICLE—BLOOD SUPPLY) (NUCLEOPROTEINS)

CHICHINADZE, N.K.

Changes in the capillary network of the seminal glands in experiments and in some pathological states. Trudy Inst. eksp. morf. AN Gruz. SSR 11:107-109 '63.

(MIRA 17:11)

1. Institut eksperimental'noy morfologii imeni Natishvili AN GruzSSR.

L 41217-66   EWT(m)/EWP(v)/T/EWP(j)   WW/RM

ACC NR: AP6011236 (A)   SOURCE CODE: UR/0413/66/000/006/0075/0075

34
B

INVENTOR: Kuznetsov, Ye. V.; Chichinadze, N. M.

ORG: none

TITLE: Preparation of polymers. Class 39, no. 179923

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
no. 6, 1966, 75

TOPIC TAGS: copolymer, methacrylic acid, polymerization

ABSTRACT: This author Certificate introduces a method for preparing
copolymers from methacrylic acid by radical polymerization in a reactive
compound. To obtain copolymers with a high adhesion capacity and
surface-active effect, E-caprolactam is suggested as the reaction
medium. [Translation]   [LD]

SUB CODE:07,11/   SUBM DATE: 23Sep63/

Card 1/1 RWLP   UDC: 678.744.332-139

BETANELI, A.M., doktor med. nauk; CHICHUADZE, O.Sh.

Case of sarcoma with localization in the esophagus and stomach. Khirurgiia 40 no.8:123-124 Ag '64.

(MIRA 18:3)

1. Khirurgicheskoye otdeleniye Kutaisskoy klinicheskoy bol'nitsy (glavnyy vrach - zasluzhennyy vrach respubliki A.S. Tsetsenidze).

MURUSIDZE, G.Ya.; IOSELIANI, M.S.; LURSMANASHVILI, O.V.; CHICHINADZE, V.K.

Results of studying elastic properties of rocks in the region of the Ladzhanur Hydroelectric Power Station. Trudy Inst. geofiz. AN Gruz. SSR 18:97-108 '60.   (MIRA 13:10)
      (Ladzhanur Hydroelectric Power Station region--Seismometry)

CHICHINADZE, V.K.

Investigating universal pump-sprayers with differential arresters.
Avt.i trakt.prom. no.9:13-16 S '57.   (MIRA 10:11)

1. Gosudarstvennyy soyuznyy ordena Trudovogo Krasnogo Znameni
nauchno-issledovatel'skiy avtomobil'nyy i avtomotornyy institut.
                    (Automobiles--Fuel systems)

MURUSIDZE, G.Ya.; CHICHINADZE, V.K.

A method of determining mean velocities from the differences
in the arrival time of reflected and refracted waves recorded
after the initial point. Izv.AN SSSR. Ser.geofiz. no.12:1795-1798
'62.   (MIRA 16:2)

1. Institut geofiziki AN Gruzinskoy SSR.
                        (Seismic waves)

Not same as CHICHINADZE,V.K. in automatics

CHICHINADZE, V. K.

"Concerning the Possibilities of Mechanizing the Synthesis Processes Of Correcting Devices With The Use of Self-Adjusting Systems."

Report submitted for the Symposium on Principles in the Design of Self-Learning Systems, Kiev Ukr SSR, 5-9 May 1961

CHICHINADZE, V. K.

CHICHINADZE, V. K. -- "Investigation of the Dynamics of Electric Drive in a Generator-Motor System with Electronic Control." Sub 25 Dec 52, Inst of Automatics and Telemechanics, Acad Sci USSR (Dissertation for the Degree of Candidate in Technical Science)

SO; VECHERNAYA MOSKVA, JANUARY-DECEMBER 1952

CHICHINADZE, V. K.

"Automatic Control Systems With Nonlinear Feedback," Soob. AN Georgian SSR,
15, No.7, p. 459, 1954

Inst. of Energetics im. A. I. Didebulidze, Acad. Sci. Georgian SSR, Tbilisi
    (Power Engineering)
Translation D 418272

CHICHINADZE, V.K.

Transient processes in the R and L two-phase half-wave rectifier
circuit. Soob.AN Gruz.SSR 14 no.4:233-237 '53.   (MLRA 7:3)

1. Akademiya Nauk Gruzinskoy SSR. Institut energetiki, Tbilisi.
                (Electric current rectifiers)

CHICHINADZE, V.K.

Current commutation associated with reversible circuits and controllable rectifiers. Trudy Energ. inst. AN Gruz.SSR 8:165-171 '53. (MIRA 11:10)

(Thyratrons) (Automatic control)

CHICHINADZE, V. K.

USSR/Electricity - Regulation

FD-1744

Card 1/1   : Pub. 19-3/12

Author   : Chichinadze, V. K. (Tbilisi)

Title   : A method for improving the dynamic properties of certain automatic
                regulation systems

Periodical   : Avtom. i telem., Vol. 16, 150-157, Mar-Apr 1955

Abstract   : The author gives a procedure for determining the characteristics of
                feedback circuits with the purpose of obtaining preassigned transient
                processes. Seven references: D. A. Bashkirov, "Graphical method of
                analyzing the transient processes in automatic regulation systems,"
                Dissertation, 1950. V. V. Rudakov, "Forcing of starting processes of
                a drive in accordance with the scheme: DC generator-motor," Elektri-
                chestvo, No 9, 1951. S. Z. Barskiy, "Resources for enhancing the
                accuracy of statistical regulation of automaticized electric drives,"
                Elektrichestvo, No 6, 1952. A. A. Fel'dbaum, "Simplest relay automatic
                regulation systems," Avtom. i telem., 10, No 4, 1949. A. Ya. Lerner,
                "Improvement of dynamic properties of automatic compensators," ibid.,
                13, No 2, 1952. A. A. Bulgakov, 1936. A. Hopkins, "Phase-plane approach
                to the compensation of saturating servo-mechanisms," Trans. AIEE 70, 1951.

Institution : -

Submitted   : February 8, 1954

14-57-6-12263

Translation from: Referativnyy zhurnal, Geografiya, 1957, Nr 6,
                   p 79 (USSR)

AUTHORS: Chichinadze, V. K., Eliashvili, A. I.

TITLE: Automatic Flow Control in the Samgorskiy Irrigation
            Project (K voprosu avtomaticheskogo regulirovaniya
            raskhodov vody v Samgorskoy irrigatsionnoy sisteme)

PERIODICAL: Tr. In-ta energ. AN GruzSSR, 1956, Vol 10, pp 131-153

ABSTRACT: Bibliographic entry

Card 1/1

13. 2000

40533

S/044/62/000/008/066/073
C111/C333

AUTHOR: Chichinadze, V. K.

TITLE: On some questions of the construction of selfadjusting
             and learning automatic control systems, basing on the
             principle of random retrieval

PERIODICAL: Referativnyy zhurnal, Matematika, no. 8, 1962, 54,
             abstract 8V286K.((Mezhdunar. federatsiya po avtomat. upr.
             1-y Mezdunar. kongress po avtomat. upr.) M., AN SSSR, 1960,
             13 p. ill.)

TEXT: One considers questions of the construction of some self-
adjusting and learning systems which work according to the principle of
random retrieval. In order to investigate the dynamics and statics of
such systems, one has developed a model apparatus according to the
scheme of the homeostat of Ashby; the apparatus is an electronic system
with a memory consisting of ferrite cores. The considered model can be
dependent on the parameter values in 5764801 states. It is said that
there the synthesis of some automatic control systems have been investi-
gated on the electronic model. On the analogy computer IPT-5 (ИПТ- 5)
an air-plane was simulated as a control distance and the corresponding

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autopilot was simulated according to a simplified scheme. The model
of the self-adjusting system has accomplished the retrieval according
to integral criteria and the experiment has shown that thereby the
structure and the parameters of the new autopilot were found out relative-
ly quick (20 to 30 seconds).

[Abstracter's note: Complete translation.]

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CHLCHINADZE, V. K.

report to be presented at the 1st Intl Congress of the Intl Federation of Automatic Control, 27 Jun-5 Jul 1960, Moscow, USSR.

S/748/61/002/000/002/003

AUTHOR: Chichinadze, V. K.

TITLE: On the construction of ultrastable and multistable systems.

SOURCE: Akademiya nauk Gruzinskoy SSR. Institut, elektroniki, avtomatiki i
          telemekhaniki. Trudy. v. 2. 1961, 17-32.

TEXT: The paper examines the general problems of the construction of self-
organizing automatic control systems of a certain class, that are based on the prin-
ciples of the random search. In such systems a stable or optimal process is obtained
by an automatic change of parameters and their structure. The so-called ultrastable
and multistable operate on that principle. Ross Ashby's "homeostat" (Design for a
brain. New York. John Wiley & Sons, Inc., 1954) is taken as an example of ultra-
stable systems. The concept of a random search, the need for it, and its potential-
ities, are analyzed. The system that performs a random search lacks the character-
istic of the more highly organized living beings, namely, the ability to analyze events,
but it is capable of a certain self-organization. A shortcoming of the determination
of desired parameters with the aid of random search, is that such determination does
not provide any indication regarding any functional relationships which the parameters
may obey. However, despite these shortcomings, the random-search method is of

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considerable interest, both theoretically and practically. Further with reference to
the Ashby homeostat, the relative probability of the attainment of a stable state is
analytically expressed. It is concluded that an ultrastable system spends a great
amount of time in the attainment of a stable state, that is, in the search for a steady-
state field. In this connection, Ashby has arrived at a compromise solution, namely,
the attainment of a multistable system with a dispersion of regimes, that is, a multi-
stable system that contains a certain multiplicity of ultrastable systems. The time
of searching then is reduced by searching first within one ultrastable system, then
within another, etc., until those parameters have been found with which the system
is stable. Special cases in which an ultrastable system does not spend much time in
searching are set forth. The determination of the probability of a system, the para-
meters of which assume various discrete values, is examined by using   an example
of the third order. The principle of the random search can be employed for the find-
ing of optimal phase trajectories, that is, optimal parameters that determine the pre-
scribed dynamic indices of a system. Systems which correspond to such optimal
parameters are termed "ultraoptimal" and "multioptimal"; it is noted that these
designations are purely conventional. In the instance of a more general concept of
thermal stability, ultrastable and multistable systems contain the ultraoptimal and
multioptimal ones. The latter differ from the ultrastable and multistable systems
by the condition of equilibrium. In the ultrastable system the steady state of the

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system serves as an equilibrium criterion. In a homeostat this occurs in the event
when not a single one of the magnetic needles deviates from the mean position; in
the ultraoptimal system the presence of certain optimal dynamic indices serves as
the condition of equilibrium. The essential equivalence of the two systems except for
the conditions of equilibrium is further discussed in detail. Thus, an ultraoptimal
system is shown analytically to spend different times on the search for a stable
state depending on the dynamic indices required. An experimental equipment, which
serves as a model of the above-reported system, has been constructed at the Insti-
tute of Electronics, Automatics, and Telemechanics, AS GruzSSR. The equipment is
of electronic nature and, therefore, differs from the Ashby homeostat. The integrat-
ing portions of the element consist of the resolving elements of the electronic simu-
lator M У 8 (MU8) of the Institute of Automatics and Telemechanics, AS USSR. In
addition to experimental investigations of self-adjusting and self-organizing systems
based on the principles of search, the simulator can also perform investigations of
ordinary automatic control systems and solve differential and algebraic equations.
Schematic circuit diagrams for the equipment are shown, and the analytical relation-
ships solved thereby are set forth. There are 10 figures and 12 references (8
Russian-language Soviet, 4 English-language, of which 2 in Russian translation).

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AUTHOR: Chichinadze, V. (USSR)

TITLE: On some design problems of adaptive and learning
             control systems, based on the principle of random
             search

SOURCE: IFAC, 1st Congress, Moscow 1960.Teoriya diskretnykh,
             optimal'nykh i samonastraivayushchikhsiya sistem.
             Trudy, v. 2, 1961, 907 - 917

TEXT: An attempt is made to apply the theory of games to adaptive
systems. An electronic simulator is described, developed by the
Institute for Electronics, Automation and Remote Control of the
Academy of Sciences of the Georgian SSR. In the case of optimum
search, the system parameters are the players; in other cases, the
devices which adjust the system and the external influences are
the players. A game which simulates the search process is of non-
zero-sum type, and involves 2 or n persons, depending on the number
of parameters. Normally, the search process consists of several cy-

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cles (steps) β_1, β_2,..., β_ν, where ν is a finite number. In each
cycle there are several alternatives of choice; the set of alterna-
tives is denoted by S. If the choice has been made, then the chosen
alternative $\xi \in S$. The set f of moves ξ determines the strategy.
Each player (searcher)may have a multitude of strategies, hence

$$f_i \in F_j \quad \begin{array}{l} i = 1,\ 2 \ldots\ m; \\ j = x,\ y \ldots\ n, \end{array} \Big\} \qquad (1)$$

where m is the number of possible strategies of a given searcher,
x, y,...., n - are the searchers. The results of the search can be
estimated by means of the cost (efficiency) function $M(f_x,\ f_y\ \ldots$

$f^n)$. It is stipulated that if the search led to an adequate result,
the function M is positive; otherwise it is negative. In some cases
however, M may represent not only qualitative results, but also
quantitative; then it assumes various values. During the search,
the adaptive system may have more than one state which satisfies
the requirements. To each state corresponds a value of M. The set
M consists of 2 subsets M_η and M_φ (the first containing all the po-

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sitive M, and the second ⟶ all the negative). The set M is bounded.
The cardinal number of M_η is denoted by n_η, and that of M_φ – by m_φ.
The notations

$$\lambda_m = \inf M_\eta, \quad \lambda_M = \text{Sup } M_\eta, \qquad (4)$$

are introduced, as well as γ_m – the minimum value of M_φ, and γ_M –
its maximum. λ_M or λ_m cannot always be determined by computation
or from the results of preceding moves. In such a case, random
search is used. If the probabilities of the strategies of the va-
rious searchers are not given, the entropy

$$H_0 = - \sum_{i=1}^{a} P_i \log P_i \qquad (5)$$

of the system should be maximal; P_i is the probability of obtain-
ing a certain M_i, $a = m^n$ (m being the number of strategies and n –
the number of searchers). The entropy can be increased by increas-

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ing the number of searchers and of strategies, and if the strate-
gies of each searcher have equal likelihood. If the random search
is effected by the method of elimination (i.e. the unfavorable va-
lues of the strategy are eliminated after each move), then the adap-
tive system can be considered as a learning (self-organizing) sys-
tem. The method of elimination can be realized by means of a memo-
ry device. Such a system becomes in fact a system with perfect in-
formation. The simulator was modelled according to Ashby's homeo-
stat with the difference that the memory device incorporates ferri-
te elements. The total number of states of the simulator system is
$m = 21^{16}$. The coefficients can assume 7 different values during
the search process. In practice, the system operates efficiently
if $m = 7^8$. This was found entirely adequate. With $m = 7^8$, $H_o =$
$= 15.15$ bit. A block-diagram of the simulator is shown. The perfor-
mance of the transient processes is measured by well-known inte-
gral criteria. The simulator can also search for optimum transient
processes, in addition to finding system parameters and configura-
tions for which the system is stable. The simulator can operate in
conjunction with the actual plant. In this case, it simulates the

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controller. The simulator consists of the following units: dynamic model of system, information unit, memory unit, comparator, and estimator of optimum characteristics. A system aircraft-autopilot was simulated. The characteristics of the transient processes in such a system are plotted in a figure. There are 4 figures and 9 references: 3 Soviet-bloc and 6 non-Soviet-bloc; (including 3 translations). The references to the English-language publications read as follows: Ashby W. Ross, Design for a brain. New York, John Wiley & Sons, Inc., 1954; I. Neumann, O. Morgenstern, Theory of games and economic behavior. Princeton University Press, Princeton, 1953; S. Vajda, The theory of games and linear programming. London, Methuen Co., Ltd.; New York, John Wiley & Sons, Inc., 1957.

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CHICHINADZE V. K.; CHARKVIANI, O. A.

" Concerning Mechanical Synthesis of Compensation Devices
by Means of Self-Adjusting Systems "
Presented at the International Federation of Automatic Control
(IFAC) Symposium on Self-adjusting System Theory, Rome, 26-28 Apr. 1962