UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/897,257	07/22/2004	Roman Chistyakov	ZON-002CN	1462

23701 7590 03/27/2008
RAUSCHENBACH PATENT LAW GROUP, LLC
P.O. BOX 387
BEDFORD, MA 01730

EXAMINER	
MCDONALD, RODNEY GLENN	
ART UNIT	**PAPER NUMBER**
1795	
MAIL DATE	**DELIVERY MODE**
03/27/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/897,257	CHISTYAKOV, ROMAN	
	Examiner	Art Unit	
	Rodney G. McDonald	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *45-77* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *45-77* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/04, 10/04, 1/05*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 45-50, 52, 54-64 and 69-77 are rejected under 35 U.S.C. 102(b) as being anticipated by Kouznetsov (WO 98/40532).

Regarding claims 45, 58, 70, 77, Kouznetsov teaches in Fig. 2 a ***magnetron sputtering*** device. The sputtering device has a sputtering chamber 1 and a target 9. The substrate 13 is attached to some electrically isolating support 15 at the end of a wall. (Page 8 lines 29-37; Column 9 lines 1-6) A magnet or magnets 17 are mounted so that the north pole or poles are arranged at the periphery of the target and the south pole or poles at the center of the target 9. One electrode, the anode, is formed by the electrically conducting walls 5 of the housing 3, which e.g. can be grounded. The other electrode, the cathode, is formed by the target 9, which is thus negatively biased in relation to the anode. The substrate 13 can have some neutral electric potential. ***A gas inlet for a suitable gas to be ionized such as argon is indicated at 21.*** (Page 9 lines 7-20) It should be noted that the anode and cathode always have a gap in order to create the plasma.

Regarding claims 45, 58, 70, 77, Kouznetsov teaches when increasing the voltage form zero and on between the anode 5 and the cathode 9, there will for some

applied voltage appear an electric glow discharge. ***The gas in the region between the anode and the cathode will be partly ionized by electrons***. The ***electrons*** will be somewhat trapped or confined by the magnetic field primarily moving in the areas of low magnetic field intensity. (Page 9 lines 21-25) Electrons are needed to ionize in the partially ionized state and the fully ionized state discussed below. The partly ionized plasma (i.e. equivalent to Applicant's weakly ionized plasma) inherently "reduces the probability" of developing an electrical break down condition in the chamber due to the plasma being partially ionized. Reducing the probability does not eliminate electrical breakdown.

Regarding claims 45, 58, 70, 77, Kouznetsov teaches an electric discharge occurs between the cathode and the anode producing electrons trapped in the magnetic field by cooperation of the electric field produced by the applied voltage. (Page 4 lines 27-31)

Regarding claims 45, 58, 70, 77, Kouznetsov teaches when increasing the voltage and current more, there will appear the state comprising ***completely ionized plasma region 27***, the region being stationary located above the surface of the target 9 and having a larger extension laterally, in the direction of the surface of the target 9 than the regions 23 of high electron and ion density used in ordinary sputtering. ***This state is made possible by the arrangement of the electric and magnetic fields crossing each other in the magnetron*** configuration. Furthermore, in this state, owing to the considerable extension and the relative homogeneity and uniformity of the ionized plasma in the region 27, ***ions will hit the target surface more regularly and***

uniformly distributed over the surface. This will result in a more homogeneous wear of the target surface, as illustrated by the area delimited by the dashed line 29 in Fig. 5b. (Page 10 lines 13-23)

Regarding claims 45, 58, 70, 77, Kouznetsov teaches ***the power source is a pulse generator used primarily to produce coatings by sputtering. The power of each pulse can be in the range of 0.1 KW to 1 MW. The pulses can have a duration in the range of less than a hundred microseconds up to hundreds of microseconds and the intervals between pulses can range from milliseconds up to seconds.*** (Page 4 lines 14-23)

Regarding claim 45, 58, 70, 77, Kouznetsov teaches the voltage can be hundreds of volts up to several kilovolts. (Page 6 lines 24-25) The magnitude and the rise time is calculated form the time and voltage discussed above.

Regarding claim 45, 58, 70, 77, Kouznetsov teaches the electric circuit will be generated at the frequency of the main supply typically with ***a frequency of 50 or 60 Hz.*** (Page 12 lines 14-15)

Regarding claim 45, 58, 70, 77, Kouznetsov teaches ***Alternating current is supplied from the power supply.*** (Page 6 lines 15-16)

Regarding claim 46, Kouznetsov teaches the pulsed power supply is a component in the ionization source. (Page 4 lines 14-23)

Regarding claim 47, 71, Kouznetsov teaches the ionization source being an electrode coupled to an AC power supply. (Page 6 lines 15-16) Power supply connected to target electrode. (See Fig. 2)

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.