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| 23701 | 7590 | 01/11/2006 | EXAMINER | |
| RAUSCHENBACH PATENT LAW GROUP, LLC P.O. BOX 387 BEDFORD, MA 01730 | | | MCDONALD, RODNEY GLENN | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 27, 2005 has been entered.

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 1, 5-10, 13, 14, 16, 19, 20, 22-31, 34, 37, 38 and 40-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Kouznetsov (WO 98/40532).

Kouznetsov teach 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

Art Unit: 1753

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. (Applies to Applicant's claim 41)

When increasing the voltage from 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) Inherently ground state atoms exist because the gas is not ionized initially. Electrons are needed to ionize in the partially ionized state and the fully ionized state discussed below. (Applies to Applicant's claims 42, 43, 46 and 48)

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)

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.**

Art Unit: 1753

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)

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)

The voltage can be hundreds of volts up to several kilovolts. (Page 6 lines 24-25) The rise time is calculated from the time and voltage discussed above. (Applies to Applicant's claims 44, 45, 49 and 50)

The electric circuit will be generate at the frequency of the main supply typically with ***a frequency of 50 or 60 Hz.*** (Page 12 lines 14-15)

Alternating current is supplied from the power supply. (Page 6 lines 15-16)

Claims 1, 4, 5, 7, 13, 14, 16, 19-25, 27-29, 32, 33, 37 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Mozgrin et al. "High Current Low-Pressure Quasi-Stationary Discharge in a Magnetic Field: Experimental Research", Plasma Physics Reports, Vol. 21, No. 5, 1995, pp. 400-409.

Mozgrin et al. teach a sputtering system as seen in Figure 1 having ***a cathode*** (1), ***an anode*** (2) and ***a magnetic system*** (3). (See Figure 1 pp. 401)

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