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.
10/834,431	04/29/2004	Leonid Glebov	UCF-424CIP	6624

76669 7590 02/17/2009

BRIAN STEINBERGER/UCF
101 BREVARD AVENUE
COCOA, FL 32922

EXAMINER	
ANGEBRANNDT, MARTIN J	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
02/17/2009	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)	
	10/834,431	GLEBOV ET AL.	
	Examiner	Art Unit	
	Martin J. Angebranndt	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 *08 December 2008*.

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) *1-23* 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4a) Of the above claim(s) _____ is/are withdrawn from consideration.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) *1-23* 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 _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The response of the applicant has been read and given careful consideration. Responses to the arguments are presented after the first rejection to which they are directed.

2. For the instant claims, the claims are accorded the filing date of the instant application as there are limitation not disclosed in the prior applications. Further, the 10/665339 application does not describe laser deflection, so the applicant cannot assert disclosure back to 09/750708 as continuity of the disclosure of this subject matter has not been maintained.

The examiner directs that applicant's attention to the following portion of the MPEP.

706.02 Rejection on Prior Art [R-6]

VI. < DETERMINING THE EFFECTIVE FILING DATE OF THE APPLICATION

(B) If the application is a continuation-in-part of an earlier U.S. application or international application, any claims in the new application not supported by the specification and claims of the parent application have an effective filing date equal to the filing date of the new application. Any claims which are fully supported under 35 U.S.C. 112 by the earlier parent application have the effective filing date of that earlier parent application.

The applicant argues that the applicant is claiming the "efficient Bragg gratings". While the applicant does have a basis for this in the various patent applications, the claims are to a means for scanning using these. There is no question that the applicant understood at least generally, that these could be used for scanning as evidenced by the Eflmov et al. '104 reference applied, but **the applicant has willfully failed to describe the scanning in the intervening application 10/665339 and so has lost the right to go back and reclaim what was abandoned by this**

action. The intervening application does not fully support the instant claims, particularly the scanning declaration, but the failure by the applicant to describe scanning in 10/665339 prevents this. Efimov et al. '104 is availible under 35 USC 102(b). The parent application has matured into parent 7326500, which does not discuss steering or scanning of beams.It is a Continuation in part of an application which has matured into patent 6673497. In filing the CIP all mention of scanning or steering of beams using gratings was removed as well as drawings 1-17 and the accompanying text. However due to the complete incorporation by reference of the grandparent application, the applicant does have continuity of subject matter for scanning with wobbled gratings, but does not have a basis for spinning the gratings in the manner recited in the claims, the date of the invention as claimed in the filing date of the instant application (4/29/2004) and the US 2002/0045104 is availible as a reference. The date of the patent disclosure form is 9/3/2003, which does not predate either US 2002/0045104 (4/18/2002) or Bramley '486 (03/20/1973). The examiner notes that while it is evidence in and of itself, it is not a declaration under 37 CFR 1.131 and does not provide any evidenciary showing of work before the date it was signed. The applicant may wish to provide evidence, such as signed laboaratory notbooks or the like if they desire to pursure this route. With regard to the continuity of subject matter (rotationally scanning the gratings), the examiner maintains the position that the previous applications fail to describe the rotational scanning and therefore the date accorded the application is the filing date o f this appl.ication. The applicant's argument has additional failing as the patent disclosure form submittted 11/13/2007 states that the “discovery” was made 2003/02/06 on page 7 of that document of that signed document. Threfore it is unlikely that the applicant can claim the invention prior to that date and the Cook references was filed

03/22/2002. The Effimov et al. et al. '104 reference, which discloses only wobbling is availible as prior art for the instant invention. The filing of a 37 CFR 1.131 declaration would not change that.

In response to the arguments of 12/08/08:

The applicant argues that Efimov et al. '104 is no available as a reference under 102(b), due to the patent disclosure form submitted 11/13/07. First, the applicant must recognize that scanning was not disclosed in the 10/665339 application and therefore the Efimov et al. '104 reference cannot be thrown out on that basis as applications 09/750,708 and 09/648,293 were issued prior to the filing of the instant application and applications 60/174432 was abandoned prior to the filing of the instant application, so the only point of continuity is through 10/665,339 (10/666339 referred to by the applicant is a typographical error) . Further then Examiner points out that scanning using rotation/spinning of the Bragg gratings (as opposed to wobbling) was not described in any of the parent applications which leaves the effective filing date that of the instant application. The statute is reproduced below:

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.

The application should note that the statute refers to the **"date of application for patent in the United States", not the date of invention as the point from which the "one year" is calculated. (see MPEP 2133.01, reproduced below)** The Patent Disclosure form is evidence, but is not in the proper format. You cannot swear behind a 102(b) reference date or otherwise

use evidence to antedate the reference as evidenced by the proper section of the MPEP reproduced below (please note section 2133.02.)

OTHERWISE END ON A HOLIDAY OR WEEKEND

Publications, patents, public uses and sales must occur "more than one year prior to the date of application for patent in the United States" in order to bar a patent under 35 U.S.C. 102(b). However, applicant's own activity will not bar a patent if the 1-year grace period expires on a Saturday, Sunday, or Federal holiday and the application's U.S. filing date is the next succeeding business day. *Ex parte Olah*, 131 USPQ 41 (Bd. App. 1960). Despite changes to 37 CFR 1.6(a)(2) and 1.10 which require the PTO to accord a filing date to an application as of the date of deposit as "Express Mail" with the U.S. Postal Service in accordance with 37 CFR 1.10 (e.g., a Saturday filing date), the rule changes do not affect applicant's concurrent right to defer the filing of an application until the next business day when the last day for "taking any action" falls on a Saturday, Sunday, or a Federal holiday (e.g., the last day of the 1-year grace period falls on a Saturday).

THE 1-YEAR TIME BAR IS MEASURED FROM THE U.S. FILING DATE

If one discloses his or her own work more than 1 year before the filing of the patent application, that person is barred from obtaining a patent. *In re Katz*, 687 F.2d 450, 454, 215 USPQ 14, 17 (CCPA 1982). The 1-year time bar is measured from the U.S. filing date. Thus, applicant will be barred from obtaining a patent if the public came into possession of the invention on a date before the 1-year grace period ending with the U.S. filing date. It does not matter how the public came into possession of the invention. Public possession could occur by a public use, public sale, a publication, a patent or any combination of these. In addition, the prior art need not be identical to the claimed invention but will bar patentability if it is an obvious variant thereof. *In re Foster*, 343 F.2d 980, 145 USPQ 166 (CCPA 1965). See MPEP § 706.02 regarding the effective U.S. filing date of an application.

2133.01 Rejections of Continuation-In-Part (CIP) Applications

When applicant files a continuation-in-part whose claims are not supported by the parent application, the effective filing date is the filing date of the child CIP. Any prior art disclosing the invention or an obvious variant thereof having a critical reference date more than 1 year prior to the filing date of the child will bar the issuance of a patent under 35 U.S.C. 102(b). *Paperless Accounting v. Bay Area Rapid Transit System*, 804 F.2d 659, 665, 231 USPQ 649, 653 (Fed. Cir. 1986).

2133.02 Rejections Based on Publications and Patents

APPLICANT'S OWN WORK WHICH WAS AVAILABLE TO THE PUBLIC BEFORE THE GRACE PERIOD MAY BE USED IN A 35 U.S.C. 103(b) REJECTION

"Any invention described in a printed publication more than one year prior to the date of a patent application is prior art under Section 102(b), even if the printed publication was authored by the patent applicant." *De Graffenried v. United States*, 16 USPQ2d 1321, 1330 n.7 (Cl. Ct. 1990). "Once an inventor has decided to lift the veil of secrecy from his [or her] work, he [or she] must choose between the protection of a federal patent, or the dedication of his [or her] idea to the public at large." *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 148, 9 USPQ2d 1847, 1851 (1989).

A 35 U.S.C. 102(b) REJECTION CREATES A STATUTORY BAR TO PATENTABILITY OF THE REJECTED CLAIMS

A rejection under 35 U.S.C. 102(b) cannot be overcome by affidavits and declarations under 37 CFR 1.131 (Rule 131 Declarations), foreign priority dates, or evidence that applicant himself invented the subject matter. Outside the 1-year grace period, applicant is barred from obtaining a patent containing any anticipated or obvious claims. *In re Foster*, 343 F.2d 980, 984, 145 USPQ 166, 170 (CCPA 1965).

2133.03 Rejections Based on "Public Use" or "On Sale" [R-5]

35 U.S.C. 102(b) "contains several distinct bars to patentability, each of which relates to activity or disclosure more than one year prior to the date of the application. Two of these - the 'public use' and the

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

If the first grating is spinning, (BG1 in figure 6) then the location/axis of the diffracted light changes and only for a certain portion of the time is the diffracted light incident at all upon the second gratings (BG2a or BG2b), let alone coaxial with the spinning axis of these, unless these are moving together in space with BG1 and while being rotated about their axes. The specification does not describe means for this or describe the gratings (BG2a or BG2b) moving in space. The enablement seems to be only for at some time in the scanning, the axis of the incident light being coaxial/coincident with the axis of the spinning grating.

The specification does not describe means for rotating the first and second gratings together so that the light diffracted by the first is always incident upon the second grating. Page 18 cited in the response does not describe these means. The figures and specification do not describe the larger movement of the second grating(s) in space so that the light diffracted over them is consistently incident upon them at the point about which they are rotated.

The Wands Factors are analyzed below:

1) The nature of the invention is laser scanning using diffractive elements (ie gratings).

2) The state of the prior art evidences scanning/steering using two diffractive elements which rotate and the light passes through them (Cole et al.). The Efimov reference teaches plural

gratings which are wobbled or pivoted to move/scan/steer the beams through space to different points.

3) The level of one of ordinary skill in the art is an individual with at least a BS degree, but mostly having either a further degree or equivalent work experience.

4) The effects of diffraction are well known and predictable, but coupling scanning with the physical movement of other elements is more complex.

5) There are no teachings of mounts/holding means or drivers (motors, etc) for either for the spinning/rotation of the gratings or the physical movement of the gratings through space.

6) A working example is mentioned on page 21, but not described in any detail (beyond its existence).

7) The breadth of the claims embrace two as well as three of more grating elements as evidenced by figures 6 and 9.

8) The skilled artisan could not make a beam scanning apparatus claimed (claims 14-23) or required in method claims 1-13 having more than two diffractive elements without undue experimentation. The scanning language requires movement on thier own to move the beams, so merely being able to move by hand the second and third gratings so that the diffracted beam in incident upon thier axis of rotation is not sufficient. A more robust and self-contained means must be disclosed. There would be significant and undue experimentation required to practice the full scope of coverage sought, where three of more gratings were coupled in their movement so that the light diffracted by the previous grating in incident upon the point of the axis of rotation of the subsequent grating.

Therefore claims 1 and 14 and those depending upon them are rejected for lacking enablement for the entirety of its scope.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1,2,4,5,11,12 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Efimov et al. '104 and Cook et al. '028

Efimov et al. '104 teaches the recording of a bragg grating using the interferences of beams from a 325 nm HeCd laser, which is thermally developed at between 500 and 650 degrees C [0059-0060,0089]. The recording of gratings in PTR glass discs and the use of these to deflect a beam is disclosed. The pivoting, (but not rotation/spinning) of the disks is disclosed [0108-0015]. Figure 8a shows deflection by diffraction of the transmitted light to other gratings and figure 8b shows deflection by diffractive reflection of the light to another grating. The diffraction efficiency is more than 93%.

Cook et al. '028 describes with respect to figures 5a-c, the two gratings may be rotated together such that the diffracted light 508 remains normally incident upon gratings 504 (5/66-6/49, particularly 6/4-15).

It would have been obvious to one skilled in the art to skilled in the art to modify the embodiments of figure 8a of Efimov et al. '104 by using a rotational motion of the gratings as shown figures 5a-c of Cook et al. '028 with a reasonable expectation of forming a useful scanner and scanning linear patterns based upon the description of scanning in both these embodiments

and/or it would have been obvious to modify the embodiment of figure 5a-c of Cook et al. '028 by using PTR gratings of Efimov et al. '104 to gain their high diffraction efficiency with a reasonable expectation of success based upon the description of scanning in both these embodiments.

The Cook et al. '028 reference addresses the issue of directing the light with the first grating toward the second grating such that it is perpendicular to the second grating.

The applicant argues that scanning of the collimated optical beams is not taught. Efimov et al. '104 specifically uses the term with respect to scanning the beam across a space as shown below:

> [0119] FIG. 9a shows beam steering by utilizing the matrix of Bragg gratings 635 recorded in PTR glass flat disc ring 630. All grating 635 should be recorded in such way to have the same Bragg angle for incident beam and various exit angles to provide selectable scanning of the space 640 with trajectories 650, 660, 670. It can be done in configuration of compact disk 630 as it is shown in FIG. 9a, or in any other configuration, e.g. orthogonal matrix. A simple estimation of capacity of such system can be done. For the laser beam 610 of 1 mm diameter, 100 gratings/cm.sup.2 can be recorded in glass plate 630. Compact disk 630 has surface of about 100 cm.sup.2. Consequently, 10.sup.4 gratings 635 can be recorded in one disk 630 of about 120 mm diameter and therefore 10.sup.4 positions in the space can be pointed. It is important that two-step process of hologram recording in PTR glass (exposure and development) allows writing of several elements in the same volume of glass with no interaction between different holograms. This means that angular scanning of matrix can result in dramatic capacity increase.

Cook et al. '028 uses the term steering instead, but the effect is the same, specifically moving the collimated laser beam so that it is directed at other positions, so the combination cannot but teach scanning of the collimated laser beam over a range of arbitary angles. The rejection stands.

7. Claims 1,2,4,5 and 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Efimov et al. '104 and Cook et al. '028, further in view of Efimov et al., "High-efficiency Bragg Gratings in Photothermorefractive glass", Appl. Opt., Vol. 38(4) pp. 619-627 (02/1999).

Efimov et al., "High-efficiency Bragg Gratings in Photothermorefractive glass", Appl. Opt., Vol. 38(4) pp. 619-627 (02/1999) describes a photosensitiove glass including 0.01 parts Ag and 0.01 CeO_2. (page 620/right column). Gratings were formed in slabs of this glass having dimensions of 5mm x 5mm x 2 mm using a two beam process, followed by heating at 520 degrees C. (page 621/left column and page 625, properties of Bragg gratings).

To address the embodiments not rendered obvious above, but bounded by the claims, the examiner cites Efimov et al., "High-efficiency Bragg Gratings in Photothermorefractive glass", Appl. Opt., Vol. 38(4) pp. 619-627 (02/1999) and holds that it would have been obvious to one skilled in the art to modify the processes and articles resulting from the combination of Efimov et al. '104 with Cook et al. '028 by use other known heat development, such as that disclosed by Efimov et al., "High-efficiency Bragg Gratings in Photothermorefractive glass", Appl. Opt., Vol. 38(4) pp. 619-627 (02/1999) with a reasonable expectation of forming a useful scanner.

8. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Efimov et al. '104 and Cook et al. '028, further in view of Araujo et al. '404, Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975), Hirao et al., "Writing Waveguides and Gratings in Silica and Related Materials by a Femtosecond Laser", J. Non-Crystal. Sol., Vol. 239 pp 91-95 (1998) and Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998).

Araujo et al. '404 teaches the heating of the glasses to 450-650 degrees C is disclosed in table I and the use of mercury arc lamps as the light darkening source and various lasers including krypton ion lasers operating at 480, 531 and 570 nm as the bleaching light source is taught in table II. The darkening of the glass is disclosed as causing color center formation (9/56-10/16). The treatment of the bistable photochromic glass to make the images stable is disclosed. (16/61-17/11).

Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975) describes the exposure of a color center forming glass to gamma or UV radiation to form color centers, followed by the decolorization using 632.8 nm (HeNe) interferometric exposure to form a hologram followed by heating.

Hirao et al., "Writing Waveguides and Gratings in Silica and Related Materials by a Femtosecond Laser", J. Non-Crystal. Sol., Vol. 239 pp 91-95 (1998) describes the use of multiphoton processes to form a crossed waveguide in a glass substrate shown in figure 1. The laser pulses are 120 fs. (page 92). The process involves laser damage to cause the refractive index changes (page 91/right column).

Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998) teaches a photosensitive glass including 0.01 parts Ag and 0.01 CeO_2. (page 567). The exposure of the glass to UV light causes absorption in the visible (figure 1b and 1c) and the development is by heating at 520 degrees C for 1 hour (page 567). The formation of holographic gratings in these materials is disclosed

(566) . The sensitivity of the materials to laser damage using a 532 nm laser is illustrated in figures 2 and 3. The use of these in scanning is disclosed on page 575 in the first answer.

To address the embodiments not rendered obvious above, but bounded by the claims, the examiner cites Araujo et al. '404, Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975), Hirao et al., "Writing Waveguides and Gratings in Silica and Related Materials by a Femtosecond Laser", J. Non-Crystal. Sol., Vol. 239 pp 91-95 (1998) and Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998) and holds that it would have been obvious to one skilled in the art to modify the processes and articles resulting from the combination of Efimov et al. '104 with Cook et al. '028 by use other known heat development, such as that disclosed by Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998) and using the UV exposure to sensitize the PTR glass to a visible laser as taught by Araujo et al. '404, Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975) and Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998) and a 532 nm ND laser to write the gratings Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975) with a reasonable expectation of forming useful gratings based upon the teachings of Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975) and the teachings of Hirao et al., "Writing Waveguides and Gratings in Silica and Related

Materials by a Femtosecond Laser", J. Non-Crystal. Sol., Vol. 239 pp 91-95 (1998) realting to the formation of gratings using laser damage such as that discussed by Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998).

9. Claims 1,2,4,5,11,12 and 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Efimov et al. '104 and Cook et al. '028, in view of Broome et al. '831 and Metlitsky et al. '904.

Metlitsky et al. '904 teach the use of two mirrors to produce scanning of laser beams as illustrated in figure 1. The formation of various scanning patterns, such as those shown figures 2-11 by changing the angles or relative rate of rotation of the mirrors

It would have been obvious to one skilled in the art to skilled in the art to modify the embodiments of figure 8b of Efimov et al. '104 by using a rotational motion of the gratings in a manner similar to that shown in figure 1 of Metlitsky et al. '904, but where the fringes of the gratings are at an angle as opposed to the grating itself with a reasonable expectation of forming a useful scanner and scanning linear patterns based upon the description of scanning in both these embodiments and the teachings of the use of reflection gratings in reflective scanners by Broome et al. '831 with a reasonable expectation of success based upon the description of scanning in both these embodiments.

10. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Efimov et al. '104 and Cook et al. '028, in view of Broome et al. '831 and Metlitsky et al. '904, further in view of Araujo et al. '404, Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975), Hirao et al.,

"Writing Waveguides and Gratings in Silica and Related Materials by a Femtosecond Laser", J. Non-Crystal. Sol., Vol. 239 pp 91-95 (1998) and Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998).

To address the embodiments not rendered obvious above, but bounded by the claims, the examiner cites Araujo et al. '404, Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975), Hirao et al., "Writing Waveguides and Gratings in Silica and Related Materials by a Femtosecond Laser", J. Non-Crystal. Sol., Vol. 239 pp 91-95 (1998) and Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998) and holds that it would have been obvious to one skilled in the art to modify the processes and articles resulting from the combination of Efimov et al. '104 with Cook et al. '028, Broome et al. '831 and Metlitsky et al. '904 by use other known heat development, such as that disclosed by Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998) and using the UV exposure to sensitize the PTR glass to a visible laser as taught by Araujo et al. '404, Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975) and Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998) and a 532 nm ND laser to write the gratings Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975) with a reasonable expectation of forming useful gratings based upon the teachings of Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi

Fiziki Vol. 1(21) pp. 975-7 (1975) and the teachings of Hirao et al., "Writing Waveguides and Gratings in Silica and Related Materials by a Femtosecond Laser", J. Non-Crystal. Sol., Vol. 239 pp 91-95 (1998) realting to the formation of gratings using laser damage such as that discussed by Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998).

11. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Efimov et al. '104 and Cook et al. '028, in view of Broome et al. '831 and Metlitsky et al. '904, combined with Araujo et al. '404, Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975), Hirao et al., "Writing Waveguides and Gratings in Silica and Related Materials by a Femtosecond Laser", J. Non-Crystal. Sol., Vol. 239 pp 91-95 (1998) and Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998), further in view of Metlitsky et al. '904 and Bryngdahl et al., 'Laser beam scanning using computer generated holograms', Appl. Opt. Vol. 15(1) pp. 183-194.

Bryngdahl et al., 'Laser beam scanning using computer generated holograms', Appl. Opt. Vol. 15(1) pp. 183-194 (01/1976) teaches the use of computer generated holograms in scanning and on pages 184 describes the equivalence of refractive, reflective and diffraction optical elements in scanning systems.

To address the embodiments not rendered obvious above, but bounded by the claims, the examiner cites Bryngdahl et al., 'Laser beam scanning using computer generated holograms', Appl. Opt. Vol. 15(1) pp. 183-194 and holds that it would have been obvious to modify the embodiments rendered obvious by the combination of Efimov et al. '104, Cook et al. '028

Broome et al. '831, Metlitsky et al. '904, Araujo et al. '404, Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975), Hirao et al., "Writing Waveguides and Gratings in Silica and Related Materials by a Femtosecond Laser", J. Non-Crystal. Sol., Vol. 239 pp 91-95 (1998) and Efimov et al., "laser induced damage of photo-thermo-refractive glasses for optical holographic element writing", Proc. SPIE 3578 (10/1998) by using grating patterns which do not result in linear scanning of the beam but result in helical, trepanning or rotational Lissajous patterns, such as those illustrated in figure 10 of the instant application and/or figures 2-11 of Metlitsky et al. '904 with a reasonable expectation of success based upon the disclosure of the equivalence of diffraction and reflective optical elements in scanning by Bryngdahl et al., 'Laser beam scanning using computer generated holograms', Appl. Opt. Vol. 15(1) pp. 183-194 (01/1976).

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Martin J Angebranndt/
Primary Examiner, Art Unit 1795

Martin J Angebranndt
Primary Examiner
Art Unit 1756

2/12/2009