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. |
|---|---|---|---|---|
| 11/636,877 | 12/11/2006 | Paul D. Daly | 2005P22560US01; 60427-640 | 9432 |

26096 7590 01/22/2009

CARLSON, GASKEY & OLDS, P.C.
400 WEST MAPLE ROAD
SUITE 350
BIRMINGHAM, MI 48009

| EXAMINER | |
|---|---|
| MCNALLY, DANIEL | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1791 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 01/22/2009 | 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) | |
|---|---|---|---|
| | 11/636,877 | DALY ET AL. | |
| | Examiner | Art Unit | |
| | DANIEL MCNALLY | 1791 | |

*-- 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 *13 November 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) *1-30* is/are pending in the application.

4a) Of the above claim(s) *1-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-30* 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 *6/29/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 1-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/13/2008.

2. Applicant's election without traverse of Group III, claims 24-30 in the reply filed on 11/13/2008 is acknowledged.

### *Claim Rejections - 35 USC § 103*

3. 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.

4. Claims 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Grosse-Holling et al. [US3841938, herein "Grosse"] or Garske et al. [US4990206, herein "Garske"] in view of either one of Cesaroni et al. [US2003/0029040, herein "Cesaroni"] or Daly [US2005/0247442] and further in view of either one of Chen et al. [US2004/0154737, herein "Chen"] or Azdasht [DE4319742A1].

Grosse discloses a method for attaching plastic pipes to a plastic pipe connecting plate. The method comprises inserting an end of the pipe (8) into a receiving bore (16) of the pipe connecting plate, pressing on the end of the pipe with a "form" (post-shaping mandrels 19) to generate a flange pressed against the surface of the connecting plate,

and welding the flange to the connecting plate (Figure 5, column 3, line 55 - column 4, line 20; column 5, line 70 - column 6, line 12).

Garske discloses a method for attaching plastic tubes to a plastic tube sheet. The method comprises inserting an end of the tube (4) into a hole of the tube sheet (3), pressing on the end of the tube with a "form" (welding tool 7) to generate a flange pressed against the surface of the connecting plate, and welding the flange to the tube sheet (Figure 7, column 1, lines 55-68; column 2, lines 15-25; column 3, line 46 - column 4, line 13).

Both Grosse and Garske disclose using a form to generate a flange and welding the flange to the tube plate, however both are silent as to laser welding the flange to the tube plate, and it is also not clear if the form used is capable of being used in a laser welding process.

Cesaroni discloses a method for attaching plastic tubes to a plastic tube sheet. The method comprises inserting ends of the tubes into holes in the tube sheet, and laser welding the tube ends to the tube sheet to form a welded seal (paragraphs 0001, 0003-0008; 0038-0044). Laser welding offers a more efficient and reliable method for preparing a welded seal between the tubes and the tube sheet, and lasers offer more control over the heat applied to a specific area.

Daly discloses a method for attaching plastic tubes to a plastic header tanks. The method comprises inserting the ends of the tubes into holes in the header tanks, and laser welding the tube ends to the header tanks (paragraph 0031). Laser welding minimizes the expense and the complexity of the welding process (paragraph 0038).

Chen discloses a method of laser welding. The method comprises irradiating the surfaces to be laser welded while the surface is pressed using a “form” (glass ball 3). Chen discloses a compressive force and laser energy can be provided simultaneously ensuring sufficient contact between the materials being welded during the laser irradiating (paragraphs 0006-0008).

Azdasht discloses a method of laser welding. The method comprises irradiating materials to be welded with laser energy, while the materials to be welded are pressed using a "form" (transparent ball 3). The direct application of pressure to the materials to be welded during the irradiation process ensures sufficient contact is maintained between the materials to be welded.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of either one of Grosse or Garske by using a laser welding process as taught by either one of Cesaroni or Daly in order to more efficiently and reliably form a weld seal between the tube and the tube sheet, and to modify the method of either one of Grosse or Garske by using a form that is transparent to laser energy as taught by either one of Chen or Azdasht in order to simultaneously apply pressure and laser energy to the weld area and ensure sufficient contact between the flange and the tube sheet.

With regard to claim 25, Chen and Azdasht disclose using a form that is spherically shaped, and the spherical surface of the form would inherently form a flange that is less than 90 degrees from the centerline of the tube.

With regard to claim 26, Chen and Azdasht disclose using a form that is substantially transparent to laser energy.

With regard to claim 27, Chen and Azdasht disclose simultaneously directing laser energy though the form while the form is being pressed onto the materials being welded.

With regard to claim 28, Chen and Azdasht disclose using a biasing member for biasing the form to its desired location.

With regard to claim 29, Chen and Azdasht disclose the “form” is a transparent glass ball.

5. Claims 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Grosse or Garske, and either one of Cesaroni or Daly, and either one of Chen or Azdasht, and optionally in view of Damsohn et al. [US5749414, herein "Damsohn"].

Either one of Grosse or Garske, as modified, disclose a method for attaching plastic tubes to a plastic tube sheet. Applicant is referred to paragraph 4 for a detailed discussion of either one of Grosse or Garske, as modified. Chen and Azdasht disclose using a form that is spherically shaped, and the spherical surface of the form would inherently form a flange that is less than 90 degrees from the centerline of the tube.

In the event that it is not inherent that a flange that is less than 90 degrees from the centerline of the tube can be formed during the laser welding process. Damsohn discloses a method of laser welding a tube to a tube sheet. The method comprises inserting the tube end into the tube sheet and irradiating laser energy onto the materials

to form a laser weld. As shown in Figure 3 the welding process results in a flange that is less than 90 degrees from the centerline of the tube. Although the material used in Damsohn are not plastic, one of ordinary skill in the art would have readily appreciated that metals and plastics are alternatives for forming tubes and tube sheets, and it would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of either one of Grosse or Garske by forming a flange that is less than 90 degrees from the centerline of the tube as taught by Damsohn in order to increase the contact area between the tube and the tube sheet and increasing the weld strength.

With regard to claim 26, Chen and Azdasht disclose using a form that is substantially transparent to laser energy.

With regard to claim 27, Chen and Azdasht disclose simultaneously directing laser energy though the form while the form is being pressed onto the materials being welded.

With regard to claim 28, Chen and Azdasht disclose using a biasing member for biasing the form to its desired location.

6. Claims 24-28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over as being unpatentable over either one of Grosse or Garske, and in view of either one of Cesaroni or Daly, and further in view of Nijman [US4510005].

Grosse discloses a method for attaching plastic pipes to a plastic pipe connecting plate. The method comprises inserting an end of the pipe (8) into a receiving bore (16) of the pipe connecting plate, pressing on the end of the pipe with a "form" (post-shaping mandrels 19) to generate a flange pressed against the surface of the connecting plate,

and welding the flange to the connecting plate (Figure 5, column 3, line 55 - column 4, line 20; column 5, line 70 - column 6, line 12).

Garske discloses a method for attaching plastic tubes to a plastic tube sheet. The method comprises inserting an end of the tube (4) into a hole of the tube sheet (3), pressing on the end of the tube with a "form" (welding tool 7) to generate a flange pressed against the surface of the connecting plate, and welding the flange to the tube sheet (Figure 7, column 1, lines 55-68; column 2, lines 15-25; column 3, line 46 - column 4, line 13).

Both Grosse and Garske disclose using a form to generate a flange and welding the flange to the tube plate, however both are silent as to laser welding the flange to the tube plate, and it is also not clear if the form used is capable of being used in a laser welding process.

Cesaroni discloses a method for attaching plastic tubes to a plastic tube sheet. The method comprises inserting ends of the tubes into holes in the tube sheet, and laser welding the tube ends to the tube sheet to form a welded seal (paragraphs 0001, 0003-0008; 0038-0044). Laser welding offers a more efficient and reliable method for preparing a welded seal between the tubes and the tube sheet, and lasers offer more control over the heat applied to a specific area.

Daly discloses a method for attaching plastic tubes to a plastic header tanks. The method comprises inserting the ends of the tubes into holes in the header tanks, and laser welding the tube ends to the header tanks (paragraph 0031). Laser welding minimizes the expense and the complexity of the welding process (paragraph 0038).

Nijman discloses a method of laser welding. The method comprises inserting a fiber (14) into a hole in a ferrule (16), placing and pressing a mold (28), which is transparent to laser energy, onto the end of the fiber, and irradiating laser energy though the mold to heat the fiber (Figure 4, column 1, lines 58-64; column 3, lines 3-34; column 5, lines 6-18). The use of a transparent mold allows the end of the fiber to be simultaneously heated and formed into the desired shape.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of either one of Grosse or Garske by using a laser welding process as taught by either one of Cesaroni or Daly in order to more efficiently and reliably form a weld seal between the tube and the tube sheet, and to modify the method of either one of Grosse or Garske by using a transparent form as taught by Nijman in order to reduce the process time of the method by simultaneously heating the tube end with laser energy while forming the tube end with the form or mold.

With regard to claim 25, Nijman discloses using a form that is spherically shaped, and the spherical surface of the form would form a flange that is less than 90 degrees from the centerline of the tube, as shown in Figure 4.

With regard to claim 26, Nijman discloses using a form that is substantially transparent to laser energy.

With regard to claim 27, Nijman discloses simultaneously directing laser energy though the form while the form is being pressed onto the materials being welded.

With regard to claim 28, Nijman disclose using a biasing member for biasing the form to its desired location.

With regard to claim 30, Nijman discloses the form comprises a spherical surface formed on a surface of a glass plate.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL MCNALLY whose telephone number is (571)272-2685. The examiner can normally be reached on Monday - Friday 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. 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.

/Daniel McNally/
Examiner, Art Unit 1791

/John L. Goff/
Primary Examiner, Art Unit 1791

/DPM/
January 14, 2009