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U.S. DEPARTMENT OF COMMERCE
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COVER SHEET

PATENTS ONLY

To the Director of the U.S. Patent and Trademark Office: Please record the attached documents or the new address(es) below.

5-18-12

1. Name of conveying party(ies)

Charles N. Hassen

Additional name(s) of conveying party(ies) attached? Yes No

3. Nature of conveyance/Execution Date(s):

Execution Date(s) May 15, 2012

- Assignment Merger
- Security Agreement Change of Name
- Joint Research Agreement
- Government Interest Assignment
- Executive Order 9424, Confirmatory License
- Other

2. Name and address of receiving party(ies)

Name: Materials and Electrochemical Research (MER) Corporation

Internal Address: _____

Street Address: 7960 S. Kolb Road

City: Tucson

State: Arizona

Country: United States Zip 85756

Additional name(s) & address(es) attached? Yes No

4. Application or patent number(s):

This document is being filed together with a new application.

A. Patent Application No.(s)

B. Patent No.(s)

PCT/US2010/002534

13/261 218

Additional numbers attached? Yes No

5. Name and address to whom correspondence concerning document should be mailed:

Name: MER Corporation

Internal Address: _____

Street Address: 7960 S. Kolb Road

City: Tucson

State: Arizona Zip 85756

Phone Number: (520) 574-1980

Fax Number: (520) 574-1983

Email Address: _____

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 1.21(h) & 3.41) \$40.00

- Authorized to be charged to deposit account
- Enclosed
- None required (government interest not affecting title)

8. Payment Information

Deposit Account Number _____

Authorized User Name _____

9. Signature:

R. O. Loutfy
Signature

05/18/2012
Date

Raouf O. Loutfy

Name of Person Signing

Total number of pages including cover sheet, attachments, and documents:

4

Documents to be recorded (including cover sheet) should be faxed to (571) 273-0140, or mailed to:
Mail Stop Assignment Recordation Services, Director of the USPTO, P.O. Box 1460, Alexandria, V.A. 22313-1460

05/21/2012 TL0011 0000006 13261218

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PATENT
REEL: 028554 FRAME: 0383

Applicant: Charles N. Hassen
International Application No.: PCT/US2010/002534
International Filing Date: September 17, 2010
For: Flow-Synchronous Field Motion Refrigeration

Docket No. 7000AF.1A

ASSIGNMENT

WHEREAS, I/we, the undersigned, CHARLES N. HASSEN, own rights to the invention entitled "Flow-Synchronous Field Motion Refrigeration", which invention is the subject of International Patent Application No. PCT/US2010/002534, filed in the United States Patent and Trademark Office on September 17, 2010, claiming priority rights of United States Provisional Application No. 61/276,895, filed September 17, 2009; said International Patent Application having a national phase entry in the United States, identified as United States Patent Application No. 13/261,218; and

WHEREAS, MATERIALS AND ELECTROCHEMICAL RESEARCH (MER) CORPORATION, (hereinafter "Company" or "Assignee"), a corporation organized and existing under the laws of the state of Arizona, and having a principal place of business at 7960 S. Kolb Road, Tucson, Arizona 85756, is desirous of acquiring the undersigned's entire right, title and interest in and to said invention, said patent applications and said priority rights;

NOW, THEREFORE, for one dollar and other good and valuable considerations, the receipt of all of which is hereby acknowledged, the undersigned hereby sells, assigns, and transfers unto said Company, its successors, assigns, and legal representatives, the undersigned's entire right, title and interest in and throughout the United States of America, its territories and all foreign countries, in and to the invention described in said patent applications, together with the undersigned's entire right, title and interest in and to said patent applications and said priority rights, and such Letters Patent that may issue thereon or patent applications that may claim priority thereto under United States law or international convention, including but not limited to non-provisionals, continuations, divisionals, designs, reissues, reexaminations, extensions, and substitutions of said patent applications, and any right, title and interest in provisional applications to which said patent applications claim priority and such Letters Patent that may issue thereon; said invention, patent applications and Letters Patent to be held and enjoyed by said Company for its own use and behalf and for its successors, assigns and legal representatives, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held by the undersigned had this assignment and sale not been made; the undersigned hereby conveys all rights arising under or pursuant to any and all United States laws and international agreements, treaties or laws relating to the protection of industrial property by filing any such applications for Letters Patent, including but not limited to any cause(s) of action and damages accruing prior to this assignment. The undersigned hereby acknowledges that this assignment carries with it the right in said Company to apply for and obtain from competent authorities in all countries of the world any and all Letters Patent by attorneys and agents of said Company's selection and the right to procure the grant of all Letters Patent to said Company in its own name as assignee of the entire right, title and interest therein;

AND, the undersigned hereby further agrees to execute upon request any other lawful documents prepared by said Company that may be deemed necessary to secure fully the aforesaid invention to said Company, its successors, assigns, and legal representatives, but at its or their expense and charges, including the execution of non-provisional, continuation, design, divisional, reissue, reexamination, substitution, or corresponding foreign or international patent applications;

AND, the undersigned hereby further agrees to provide statements or testimony in any interference or other proceeding in which said invention or any patent application or patent directed thereto may be involved;

AND, the undersigned hereby authorizes and requests the Director of the United States Patent and Trademark Office and the empowered officials of all other governments to issue such Letters Patent as shall be granted upon said applications, or applications based thereon, to said Company, its successors, assigns, or legal representatives.

IN WITNESS WHEREOF, I have unto set my hand and seal on the date indicated by my signature.

Inventor Signature: Charles N. Hassen
Charles N. Hassen

Date: 15-MAY-2012

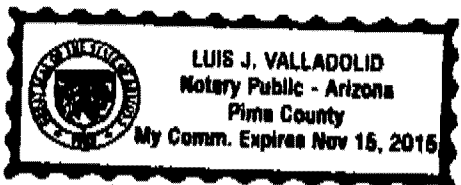
STATE OF AZ)
) ss.
COUNTY OF Pima)

On the 15 day of May, 2012, before me personally came Charles N. Hassen to me known to be the individual described in and who executed the foregoing instrument and acknowledged that he/she executed the same.

(SEAL)

Luis J. Valladolid
NOTARY PUBLIC

My commission expires: Nov 15, 2015



FOR THE COMPANY:

Signature: R.O. Louffy
Position: President
Date: 05/18/2012

STATE OF Az)
) ss.
COUNTY OF Pima)

On the 18th day of May, 2012, before me personally came R.O. Louffy to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that he/she executed the same.

(SEAL)

Joanne Carrillo
NOTARY PUBLIC

My commission expires: 2-15-12

