

**UNITED STATES DISTRICT COURT  
DISTRICT OF ARIZONA**

-----	x	
FILTERMAG, INC., a Delaware corporation,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Case No.: _____
	)	
FILTERMAG INTERNATIONAL, INC., a Delaware corporation,	)	<b>INJUNCTIVE RELIEF SOUGHT</b>
	)	
Defendant.	)	
-----	x	

**COMPLAINT**

Plaintiff FILTERMAG, INC. (“Plaintiff”), by and through its attorneys, ASHMAN LAW, LLC, for its Complaint against Defendant FILTERMAG INTERNATIONAL, INC. (“Defendant”), alleges, upon knowledge as to itself and its own acts and otherwise upon information and belief, as follows:

**NATURE OF THE ACTION**

1. After Defendant breached a certain license agreement to license patents owned by Plaintiff, causing damage, Plaintiff terminated the license agreement according to its terms. Despite the termination, Defendant continues to exploit the patents, infringing upon and in violation of Plaintiff’s rights. Plaintiff seeks an injunction; an accounting; actual, statutory, and punitive damages; interest; and an award of attorneys’ fees for Defendant’s misconduct.

**PARTIES**

2. Plaintiff Filtermag, Inc. is a Delaware corporation with a principal place of business located at 2271 Green Dr., Lake Havasu City, AZ 86406.

3. Defendant Filtermag International, Inc. is a Delaware corporation with a principal place of business at 7641 E. Gray Rd., Ste. E, Scottsdale, AZ 85260.

**JURISDICTION AND VENUE**

4. This is an action for patent infringement arising in part under the patent laws of the United States, codified at 35 U.S.C. §§ 1, *et seq.* This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

5. This Court has supplemental jurisdiction over Plaintiff's state law claims pursuant to 28 U.S.C. § 1367. The federal and state claims alleged herein are so related that they form part of the same case or controversy. Judicial economy, convenience, fairness to parties, and avoidance of inconsistent obligations all favor this Court's assertion of jurisdiction over the state law claims.

6. This Court has personal jurisdiction over Defendant. At all times material to the allegations of this Complaint, Defendant has been and is located in this District, has transacted and does transact business in this District, and has otherwise purposely availed itself of the privileges and benefits of the laws of the State of Arizona. In addition, this Court has jurisdiction over Defendant because Defendant has committed acts of patent infringement during the course of its business in this District.

7. Venue is proper in this District pursuant to 28 U.S.C. § 1400(b) and 28 U.S.C. § 1391.

**FACTS**

8. Plaintiff is a creator and provider of magnetic filtration solutions. Incorporated in 2007, Plaintiff has been a pioneer in researching, developing, and utilizing rare earth magnets to substantially reduce the presence of harmful particles from oil, hydraulic and fuel systems. By utilizing a custom designed, heat resistant alloy, Plaintiff's products filter wear-causing particles in a non-invasive manner, operating at temperatures upwards of 300 degrees Fahrenheit (while most magnetic alloys cannot surpass 180 degrees fahrenheit). Its innovative, patented filtration technology can extend the lifetime of strategic capital equipment significantly, helping businesses save drastically on operating costs

9. Plaintiff has expended substantial resources researching and developing its patented technologies, technical strategies, and business plans related to the filtration field. This research and development has led to numerous innovative products in the magnetic filtration market. The United States Patent and Trademark Office has recognized Plaintiff's achievements by awarding a number of patents to Plaintiff and its inventors as a result of these innovations.

10. Among the patents that Plaintiff has been awarded are those listed below, to which Plaintiff owns all title, rights, and interest:

<u>Patent Number</u>	<u>Title</u>
US 6554999 (the '999 patent)	Magnetic Assembly to Applied Against an Oil Filter
US 7192520 (the '520 patent)	Magnetic Device for Attachment On an Exterior Wall of a Filter Cannister

A copy of the patents are attached hereto as Group Exhibit A.

11. On October 18, 2013, Plaintiff, as licensor, entered into an Intellectual Property Licensing Agreement (the "Agreement") with Defendant, as licensee. A copy of the Agreement is attached hereto as Exhibit B. The Agreement stipulated an agreed term of seven years, a term which could not be extended except by express written agreement, and which would have ended October 18, 2020. The Agreement provided Defendant with an exclusive, perpetual, non-assignable, fee bearing, revocable license for use of the '999 and '520 patents. In return, Defendant paid an annual administrative fee of \$10,000 every October, an initial royalty payment of \$100,000, and a quarterly royalty as a percentage of gross revenues each year (4% for the first year, 5% for each subsequent year). These payments would continue until the term ended, or the sum of \$1,250,000 was reached (inclusive of the initial royalty payment, but not inclusive of the annual administrative fee), whichever occurred first.

12. The Agreement left title, all ownership rights, and interests with Plaintiff. It further granted to both parties the right to terminate the Agreement prior to the end of the term. For Plaintiff to terminate, the Agreement identified several triggering events, including Defendant's failure to make payment, a material breach of the Agreement by Defendant, the

discontinuation of Defendant's business operations, any assignment of the license, or bankruptcy. When termination is warranted by Defendant's failure to pay royalties or its material breach of the Agreement, written notice must be given, and the licensor given 30 days to cure the defect.

13. On October 18, 2019, Defendant International failed to pay the annual \$10,000 administrative fee.

14. Following the failure to pay the annual administrative fee, Defendant failed to pay any quarterly royalty payments. From the fourth quarter 2019 through the present, Defendant has made no remittances of any royalty payments whatsoever.

15. By letter dated January 15, 2020, Plaintiff terminated the license to Defendant pursuant to the terms of the Agreement. A copy of the January 15, 2020 notice is attached hereto as Exhibit C. The notice further instructed Defendant to cease and desist from utilizing the intellectual property licensed in the Agreement, and demanded payment of amounts then due and owing. No attempt was made to cure the breach, or remit royalties owed to the Plaintiff. Request for an accounting, as provided for in the Agreement, have gone ignored. Despite the lack of a license, Defendant continues to exploit the '999 patent and the '520 patent, selling product infringing on Plaintiff's exclusive rights to those patents, causing damage.

**COUNT I**  
**WILLFUL INFRINGEMENT OF THE '999 PATENT**

16. Plaintiff re-alleges and incorporates the allegations of paragraphs 1-15.

17. The '999 patent is valid and enforceable.

18. Plaintiff owns all rights, title, and interest in the '999 patent, including all rights to exploit and enforce the '999 patent.

19. Defendant, by and through the Agreement, is and has been aware of Plaintiff's exclusive ownership rights, including the Plaintiff's right to exploitation and enforcement, and acknowledged such rights in the Agreement.

20. On January 15, 2020, Plaintiff terminated its license with Defendant regarding the use of the '999 patent.

21. Defendant had proper notice of the termination, and did not cure the defects that led to said termination of the licensing agreement.

22. Defendant, without license or permission, has continued to utilize and exploit the '999 patent. Such unlicensed use constitutes infringement of the '999 patent.

23. Plaintiff has suffered, and continues to suffer, damages due to Defendant's willful infringement of the '999 patent, in an amount to be proven at trial.

**COUNT II**  
**WILLFUL INFRINGEMENT OF THE '520 PATENT**

24. Plaintiff re-alleges and incorporates the allegations of paragraphs 1-15.

25. The '520 patent is valid and enforceable.

26. Plaintiff owns all rights, title, and interest in the '520 patent, including all rights to exploit and enforce the '520 patent.

27. Defendant, by and through the Agreement, is and has been aware of Plaintiff's exclusive ownership rights, including the Plaintiff's right to exploitation and enforcement, and acknowledged such rights in the Agreement.

28. On January 15, 2020, Plaintiff terminated its license with Defendant regarding the use of the '520 patent.

29. Defendant had proper notice of the termination, and did not cure the defects that led to said termination of the licensing agreement.

30. Defendant, without license or permission, has continued to utilize and exploit the '520 patent. Such unlicensed use constitutes infringement of the '520 patent.

31. Plaintiff has suffered, and continues to suffer, damages due to Defendant's willful infringement of the '520 patent, in an amount to be proven at trial.

**COUNT III**  
**BREACH OF CONTRACT**

32. Plaintiff re-alleges and incorporates all stated allegations set forth herein.

33. Plaintiff and Defendant entered into the Agreement, which provided in pertinent part for the payment of an annual administrative fee, quarterly royalty payments, and the right of Plaintiff to an accounting. Under the Agreement, the failure to make timely payment subjects Defendant to default interest at a rate of eighteen percent (18%) per annum.

34. Despite repeated demands and formal notice, Defendant has failed to pay the annual administrative fee, due on October 18, 2019.

35. Despite repeated demands and formal notice, Defendant has failed to pay quarterly royalty payments since the third quarter, 2019.

36. Despite repeated demands and formal notice, Defendant has refused to provide access to Defendant's books and records to perform an audit, as required under the Agreement.

37. Despite repeated demands and formal notice, Defendant continues to use the patents at issue in the Agreement without adhering to the contractual terms thereof.

38. Defendant's actions and failures to act constitute material breaches of the Agreement.

39. Plaintiff has satisfied all of its obligations under the Agreement and is not in breach thereof.

40. Defendant's breaches of the Agreement has caused damage to Plaintiff in an amount to be proven at trial.

**PRAYER FOR RELIEF**

**WHEREFORE**, Plaintiff prays for judgment and relief as follows:

A. A declaration that the asserted patents are valid and enforceable, and that Defendant has infringed and continues to infringe one or more claims of the asserted patents;

B. A preliminary and/or permanent injunction enjoining Defendant, its directors, officers, agents, and employees, and those acting in privity or in concert with them, from further acts of infringement of the asserted patents;

C. An award of damages adequate to compensate Plaintiff for Defendant's infringement, in accordance with 35 U.S.C. § 284, including all pre-judgment and post-judgment interest and costs;

D. An award of treble damages to the amount found or assessed by virtue of the deliberate and willful nature of Defendant's infringement, in accordance with 35 U.S.C. § 284;



- E. An award of attorneys' fees under 35 U.S.C. § 285;
- F. An accounting of Defendant's books and records, as provided in the Agreement, to determine the amount due to Plaintiff;
- G. An award of damages in an amount to be determined at trial as a result of Defendant's breaches of contract;
- H. An award of pre-judgment and post-judgment interest on any award;
- I. Any and all other relief that this Court deems just and proper.

Dated: September 17, 2020

**FILTERMAG, INC.,**



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312.873.3800 (f)  
[kashman@ashman.law](mailto:kashman@ashman.law)

# **EXHIBIT A**

**502161125 12/13/2012**

## PATENT ASSIGNMENT

Electronic Version v1.1

Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT								
NATURE OF CONVEYANCE:	MERGER								
EFFECTIVE DATE:	11/21/2007								
CONVEYING PARTY DATA									
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Tigermag, Inc.</td> <td>11/12/2007</td> </tr> </tbody> </table>		Name	Execution Date	Tigermag, Inc.	11/12/2007				
Name	Execution Date								
Tigermag, Inc.	11/12/2007								
RECEIVING PARTY DATA									
Name:	FilterMag, Inc.								
Street Address:	13260 W Foxfire Dr, Ste 7								
City:	Surprise								
State/Country:	ARIZONA								
Postal Code:	85378								
PROPERTY NUMBERS Total: 3									
<table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Patent Number:</td> <td>5556540</td> </tr> <tr> <td>Patent Number:</td> <td>6554999</td> </tr> <tr> <td>Patent Number:</td> <td>7192520</td> </tr> </tbody> </table>		Property Type	Number	Patent Number:	5556540	Patent Number:	6554999	Patent Number:	7192520
Property Type	Number								
Patent Number:	5556540								
Patent Number:	6554999								
Patent Number:	7192520								
CORRESPONDENCE DATA									
Fax Number:									
<i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i>									
Phone:	623-556-4201								
Email:	myount@filtermag.com								
Correspondent Name:	Randy Yount								
Address Line 1:	13260 W Foxfire Dr., Ste 7								
Address Line 4:	Surprise, ARIZONA 85378								
NAME OF SUBMITTER:	Randy Yount								
This document serves as an Oath/Declaration (37 CFR 1.63).									
Total Attachments: 3 source=Certificate of Merger#page1.tif source=Certificate of Merger#page2.tif source=Certificate of Merger#page3.tif									

OP \$120.00 5556540

502161125

PATENT  
REEL: 029459 FRAME: 0783

# Delaware

PAGE 1

*The First State*

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF MERGER, WHICH MERGES:

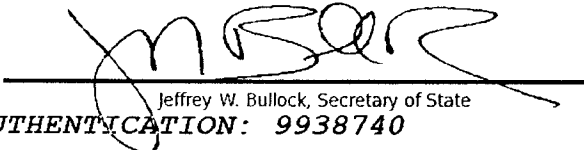
"TIGERMAG, INC.", AN ARIZONA CORPORATION,  
WITH AND INTO "FILTERMAG, INC." UNDER THE NAME OF  
"FILTERMAG, INC.", A CORPORATION ORGANIZED AND EXISTING UNDER  
THE LAWS OF THE STATE OF DELAWARE, AS RECEIVED AND FILED IN THIS  
OFFICE THE TWENTY-FIRST DAY OF NOVEMBER, A.D. 2007, AT 9:37  
O'CLOCK A.M.

4364537 8100M

121142922

You may verify this certificate online  
at [corp.delaware.gov/authver.shtml](http://corp.delaware.gov/authver.shtml)



  
Jeffrey W. Bullock, Secretary of State  
AUTHENTICATION: 9938740

DATE: 10-23-12

PATENT  
REEL: 029459 FRAME: 0784

State of Delaware  
Secretary of State  
Division of Corporations  
Delivered 10:40 AM 11/21/2007  
FILED 09:37 AM 11/21/2007  
SRV 071245990 - 4364537 FILE

**CERTIFICATE OF MERGER UNDER SECTION 252(c) OF  
THE DELAWARE GENERAL CORPORATION LAW**

**MERGER OF TIGERMAG, INC.  
WITH AND INTO FILTERMAG, INC.**

November 12, 2007

Pursuant to Section 252(c) of the General Corporation Law of the State of Delaware (the "DGCL"), FilterMag, Inc. ("FilterMag") hereby makes this certificate of merger ("Certificate") and certifies as follows with regard to the merger ("Merger") of TigerMAG, Inc. ("TigerMAG") with and into FilterMag, as provided in that certain agreement and plan of merger entitled "Plan of Merger" and dated as of September 30, 2007, by and between FilterMag and TigerMAG (hereinafter, "Merger Agreement"):

1. The names and states of incorporation of FilterMag and TigerMAG are, respectively:

<u>Name</u>	<u>State of Incorporation</u>
FilterMag, Inc. ....	Delaware
TigerMAG, Inc. ....	Arizona

2. The Merger Agreement has been approved, adopted, certified, executed and acknowledged by each of FilterMag and TigerMAG in accordance with Section 252(c) of the DGCL.

3. The name of the surviving corporation is FilterMag, Inc.

4. The Certificate of Incorporation of FilterMag preceding the Merger shall be the Certificate of Incorporation of the surviving corporation.

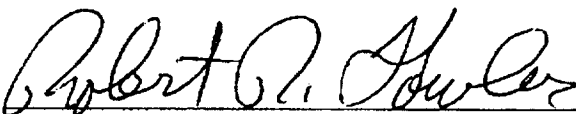
5. The executed Merger Agreement is on file at the office of FilterMag, located at 13260 West Foxfire Drive, Unit 7, Surprise, Arizona 85374.

6. A copy of the Merger Agreement will be furnished by FilterMag, on request and without cost, to any stockholder of FilterMag and to any shareholder of TigerMAG.

7. The authorized capital stock of TigerMAG immediately preceding the Merger is: 100,000,000 shares of common stock, no par value per share; and 10,000,000 shares of preferred stock, no par value per share.

IN WITNESS WHEREOF, this Certificate has been executed as of the date first written above for delivery to and filing in the Office of the Secretary of State of the State of Delaware.

FILTERMAG, INC.

By: 

Name: Robert R. Fowler

Title: President and Chief Executive Officer

# USPTO PATENT FULL-TEXT AND IMAGE DATABASE

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( 1 of 1 )

**United States Patent**  
**Brunsting**

**6,554,999**  
**April 29, 2003**

Magnetic assembly to applied against an oil filter

### Abstract

A magnetic device for attachment to an exterior wall of an oil filter canister whose purpose is to attract ferrous particles being conducted through the oil passing through the oil filter canister and cause such to be adhered to the inner wall surface of the sidewall of the oil filter canister. The device has an enclosing frame within which is mounted a series of thin walled plates. The plates are located in a stacked relationship. The plates permit flexing of the enclosing frame so that a plurality of magnets that are mounted in conjunction with the frame will always be located flush against the exterior wall surface of the canister even though the diameter of the canister may vary by the canisters being constructed by different manufacturers. The magnets are coated with a plastic coating to prevent contact with moisture to prevent rusting of the magnets. Abutting surfaces of the magnets are prevented from direct contact by the use of a thin plastic strip to thereby prevent degradation of the coating and exposing of the surface of the magnets to the ambient conditions which could also cause rust. A lanyard may be provided as a safety harness to connect the device to an exterior structure.

**Inventors: Brunsting; William J.** (Lake Havasu City, AZ)

**Family ID: 25223149**

**Appl. No.: 09/817,467**

**Filed: March 26, 2001**

**Current U.S. Class:** **210/222**; 184/6.25; 210/223

**Current CPC Class:** B01D 35/06 (20130101); B03C 1/288 (20130101); B03C 1/0332 (20130101); F01M 2001/1042 (20130101); B03C 2201/30 (20130101); B03C 2201/18 (20130101)

**Current International Class:** B01D 35/06 (20060101); F01M 11/03 (20060101); B01D 035/06 ( )

**Field of Search:** ;210/222,223,695,224 ;335/302,303,304,306 ;209/636,609,213,212 ;96/1 ;95/28 ;184/6.25

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**References Cited [Referenced By]**

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**U.S. Patent Documents**

<a href="#">3892658</a>	July 1975	Benowitz
<a href="#">4217213</a>	August 1980	Schuster
<a href="#">5354462</a>	October 1994	Perrit
<a href="#">5510024</a>	April 1996	Caiozza
<a href="#">5556540</a>	September 1996	Brunsting
<a href="#">5714063</a>	February 1998	Brunsting
<a href="#">5932108</a>	August 1999	Brunsting

**Other References**

FilterMag.TM.; "Patented Filtermag removes steel particles as small as 2 micron from engine oil" Auguat 2002 [retrieved on Oct. 2002]; Retrive4d from the internet <URL: www.filtermag.com22

..

*Primary Examiner:* Walker; W. L.  
*Assistant Examiner:* Menon; K S  
*Attorney, Agent or Firm:* Munro; Jack C.

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**Claims**

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What is claimed:

1. An assembly for attachment to an exterior wall of an oil filter canister comprising: an enclosing frame having an internal cavity; a series of thin walled plates mounted within said cavity, said plates being located in a stacked relationship; and a plurality of magnets mounted in conjunction with said enclosing frame, said magnets having an exposed surface adapted to be placed flush against the oil filter canister, said plates allowing for the flexing of said enclosing frame so said magnets will be flush against the oil filter canister where the oil filter canister is of any size within a certain range of sizes, whereby said magnets generate a magnetic force which not only secures said assembly to the canister but generates a magnetic field within the canister which attracts and holds ferrous particles against the sidewall of the canister preventing such from exiting the canister.
2. The assembly as defined in claim 1 wherein: said plates having a thickness of less than 0.025 of an inch.
3. The assembly as defined in claim 1 wherein: said series of thin walled plates being arcuate in their longitudinal configuration so as to closely conform in shape to the exterior surface of the canister.
4. The assembly as defined in claim 1 wherein: said plates being constructed of steel.



5. The assembly as defined in claim 1 wherein: said series of thin walled plates having a longitudinal center, said plates being secured together at said longitudinal center.
6. The assembly as defined in claim 1 wherein: a plastic strip being mounted between abutting wall surfaces of said magnets.
7. The assembly as defined in claim 1 wherein: said magnets being coated with a non-ferrous covering.
8. The assembly as defined in claim 1 including: a lanyard being attached to said enclosing frame, said lanyard being adapted to be attached to an exterior structure thereby preventing separation of said assembly from an installing location and readily available to be reinstalled on a new oil filter canister.
9. The assembly as defined in claim 1 wherein: said magnets being fixed in position relative to said enclosing frame.
10. An assembly for attachment to an exterior wall of a cylindrical filter canister through which a liquid is to pass comprising: a plurality of thin walled plates located in a stack, there being an inner plate and an outer plate, said inner plate adapted to be located directly adjacent with an exterior wall of the canister with said outer plate located a greater distance from the exterior wall; and a plurality of magnets mounted against said inner plate, said magnets having an exposed surface adapted to be placed against the exterior wall of the canister, said plates permitting flexing of said stack so said magnets will always be mounted flush against the exterior wall of the canister selected from a plurality of different diameters of canisters, whereby said magnets generate a magnetic force which not only secures said assembly to the canister but generates a magnetic field within the canister which attracts and holds ferrous particles that are flowing with the liquid against the canister preventing such from exiting the canister by continuing to flow with the liquid.
11. The assembly as defined in claim 10 wherein: said plates are arcuate forming a concave surface at said inner plate, said magnets being mounted within said concave surface.
12. The assembly as defined in claim 10 wherein: said stack having a longitudinal dimension, said stack having an arcuate shape along said longitudinal dimension, said stack being flexible so as to vary said arcuate shape.
13. The assembly as defined in claim 10 wherein: said plates being constructed of a ferrous material.
14. An assembly for attachment to an exterior wall of a cylindrical oil filter canister through which is to be conducted flowing liquid, said canister having an exterior wall and an interior wall with the liquid to be in contact with said interior wall, said assembly comprising: a housing to be placed on said exterior wall; a plurality of ferrous metallic members mounted on said housing with said housing to be mounted on said exterior wall of said canister, at least two of said ferrous metallic members having substantially the same thickness; and a plurality of magnets attached to said housing and mounted against said metallic members, said magnets having an exposed surface adapted to be placed against the oil filter canister, said members permitting flexing of said housing so said magnets will always be mounted flush against said interior wall of the canister selected from a plurality of different diameters of canisters, whereby said magnets generate a magnetic force which not only secures said assembly to the canister but generates a magnetic field within the canister which attracts and hold ferrous particles submerged within the liquid against said interior wall of said canister preventing such from flowing with the liquid.

## *Description*

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### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention generally relates to an adjustable assembly for removing submicron to micron sized ferrous particles from moving liquids and in particular, is concerned with a series of magnets locatable on an oil filter canister usable within a closed system of lubricating oil with the series of magnets to be mounted on the exterior surface of the oil filter which results in a magnetic force attracting and holding ferrous particles entrained within the oil against the inside surface of the oil filter preventing circulation of these particles within the closed system and thereby within the engine to which the closed system connects.

#### 2. Description of the Prior Art

Most engines used in automobiles, trucks and boats include canister-shaped oil filters that filter the engine's lubricating oil, removing foreign matter therefrom. To eliminate the larger particles of foreign matter, the engine oil is typically forced through a porous material in the oil filter that allows the liquid oil to pass through, but does not allow the passage of the larger particles. In this manner, the larger particles of foreign matter can be removed from the engine's lubricating oil. However, because this separation technique relies upon filtration through a porous material, particles that are smaller than the openings in the porous material are normally not removed by the filter medium. One particularly harmful type of foreign matter in lubricating oil is the small metallic (ferrous) particles which are created by the frictional contact between the moving metal parts of the engine. These particles are actually shards of metal from the metal parts of the engine that are dislodged during operation of the engine. These metallic particle contaminants can damage important engine components as such circulate through the engine.

Small metallic particles often have a cross-sectional dimension smaller than the openings in the porous filter material which means the oil filter is ineffective in the removing of these particles. When not removed by the oil filter, these small metallic particles will freely circulate through the engine until they are finally removed when the oil is changed. Typically, the porous material used in oil filters consists of a fibrous material that has openings with an average diameter greater than 20 microns. Hence, metallic particles with a cross-sectional dimension of 20 microns or smaller are often not trapped by the filter. Some metallic particles are larger than 20 microns. These metallic particles have sharp edges. Movement of these large particles by the force of the flow of the oil will cause these particles to "slice" like a knife through the filter producing holes greater than 20 microns thereby decreasing the filtering effectiveness of the oil filter.

The micron and submicron sized metallic particles are a major cause of wear of the moving components of the engine. Specifically, as the oil is circulated throughout the engine to lubricate the various moving components, the metallic particles entrained in the oil are carried to the interface between the moving components. At these locations, the hardness of the metallic particles causes metal to bear against metal, and reliance is placed solely upon the oil to maintain a lubricating film. When these metallic particles are brought to these interfaces, damage to the adjoining surfaces is likely. This damage eventually results in a degradation of the close tolerances between the moving parts, causing a loss in operating engine efficiency and more frequent maintenance in the form of repair. By some estimates, these metallic particles are the cause of more

than one-half of the wear on the engine.

One approach taken by the prior art to eliminate these particles has been to install a magnetized drain plug in the crankcase of the engine. The magnetized drain plug generates a magnetic field around the magnet within the crankcase, which in turn attracts and removes some of the metallic particles from the lubricating oil as it flows through the crankcase. However, when the engine is running, the flow of oil through the crankcase can be at such a high flow rate so as to carry the metallic particles entirely through the magnetic field produced by the magnetized drain plug. In other cases, the magnetic field itself is insufficiently strong or extensive to attract and remove a meaningful number of particles from the lubricating oil.

Another prior approach to solve this problem has been to attach a magnet to the oil filter canister intending to create a magnetic field within the filter to attract and hold the ferrous particles against the walls of the filter. Unfortunately, these prior art attempts did not generate a sufficiently strong magnetic field to attract and hold any significant number of the metallic particles in the oil. The metallic particles contained in the oil, even if such pass through the magnetic field, are not likely to be attracted and thus continue to circulate through the engine.

A magnetic belt assembly for oil filters is disclosed in U.S. Pat. No. 3,460,679. This patent teaches securing the outside surface of permanent magnets to the inner surface of an annular spring steel belt. The belt is placed around an oil filter cartridge with the inner surfaces of the magnets engaging the outer surface of the cartridge. The cartridge is magnetized by the magnets to attract metallic particles from the oil therein. The magnets are elongated and aligned axially on the cartridge. The magnets are spaced relative to each other on the spring steel belt which is more narrow than the elongated axial dimension of the magnets. As a result, only the middle region of the back surface of the magnets is covered by the narrow belt.

One significant problem associated with the device disclosed in U.S. Pat. No. 3,460,679 is the inability to generate a sufficiently strong magnetic field within the filter cartridge. The intensity of the magnetic field generated by the magnets is greater on the outside of the cartridge than on the inside thereof due to the influence of the metallic cylindrical outer wall of the cartridge. The present inventor actually constructed a device according to U.S. Pat. No. 3,460,679 and used a gauss meter to take measurements of the amount of magnetic force that was produced. The magnets that were used were bonded to iron having approximately a 5 MG maximum energy product. The band utilized was constructed of spring steel of a thickness of 0.032 of an inch with a width of 0.375 of an inch. There were ten in number of magnets used that were located circumferentially around the filter canister about two inches from the top surface of the canister. The annular spring steel belt was centered over the middle of the magnets thus about 37.5% of the back of the magnets was covered by the annular spring steel belt. The magnets were separated from each other by 1.25 inch from edge to edge in a circumferential direction. The gauss readings on the back of the annular spring steel belt were 836 gauss, on the back of the exposed magnets was 1526 gauss with the reading inside the canister being only 98 gauss. It can thus be seen that compared to the magnet force of the magnets themselves, only about 7% of the magnetic force is supplied to within the canister. Therefore, most of the metallic particles suspended in the oil flowing within the cartridge are not retained within the cartridge by the relatively weak magnetic field therein.

Reference is to be had to U.S. Pat. No. 3,402,820, Lohmann, in which there was disclosed a magnetic cleaner for a coolant. The coolant is to be moved through an elongated conduit and on the exterior wall of the conduit is mounted a magnetic arrangement. The magnetic arrangement comprises a plurality of different magnets which are separated by spacers. The magnets and the spacers are retained in place on the conduit by means of

a clamping arrangement on the exterior surface of the magnetic arrangement. This structure of Lohmann was never designed to be utilized within a pressurized environment which is where the structure of the present invention is intended to be used. In most instances the mounting of an oil filter within an engine is in a very restricted area with very little space being left between the oil filter and the engine block or other associated parts of the engine. In other words, space is minimal. The structure of Lohmann is of such a great size that it would be incapable of being used in conjunction with an oil filter mounted on an engine. Additionally the spacing of the magnets within Lohmann substantially decreases the magnetic field within the elongated conduit. The present inventor constructed the device of Lohmann and again made gauss readings on the device. Magnets used were the same as those used in the discussion in the reference of U.S. Pat. No. 3,460,679. Because of the spacing of the magnets within Lohmann, the magnetic field recorded only 0.63 kG within the canister. If the magnets were placed in a flush abutting relationship as is the case within the present invention, the reading would increase within the canister to 1.69 kG.

The present inventor has obtained U.S. Pat. Nos. 5,556,540, 5,714,063 and 5,932,108 on improved devices to be mounted on the exterior surface of an oil filter for removing of metallic particles within the oil passing through the filter. Although these devices are known to work at a much improved level of operation, these devices have deficiencies. One deficiency has to do with the flux band that supports the magnets. The flux band previously has been constructed to be rigid. Oil filters of the same size and of different manufacturers vary slightly in diameter. It is important that the magnets be pressed tightly into contact with the exterior surface of the oil filter. If the flux band is designed for a slightly different diameter than the oil filter on which it is being used, the result is that some of the magnets will not be pressed tightly against the oil filter causing diminished performance.

## SUMMARY OF THE INVENTION

The primary objective of the present invention is to construct a device that includes an assembly of magnets that is to be mounted on the exterior surface of an oil filter canister where the device can be adjustable to accommodate to differences in diameters of oil filters so that all of the magnets of the magnet assembly will be pressed against the exterior surface of the oil filter to the inside surface of the canister in order for the device to operate optimally to not only hold tightly to the canister but also extract and hold most ferrous particles from the oil passing through the canister.

The structure of the present invention comprises a device that utilizes a plurality of bar magnets which are located in a side-by-side arrangement. An enclosing frame constructed of non-magnetizable material is mounted about the magnets and is constructed to tightly hold the magnets together. The flux band is constructed of a plurality of thin low carbon steel plates with these plates being interlocked together at the longitudinal center point. The thin sheets of steel are located in the configuration of an arc with this arc being a segment of a circle. The material of construction of the enclosing frame will preferably comprise nylon with this nylon and the thin sheets of low carbon steel (with high permeability) of the flux band permitting adjustability of the device so as to expand to a slightly greater diameter or capable of being moved to a slightly diameter. The result is, although the device is manufactured for a specific diameter of oil filter, the device can adjust to a slightly increased diameter and also to a slightly smaller diameter, and in each instance, the surface of the magnets will be maintained flush against the exterior surface of the oil filter.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an isometric view of the magnet device of the present invention showing as it being applied to the

exterior surface of an oil filter;

FIG. 2 is a longitudinal cross-sectional view through the magnet device and filter canister taken along line 2-2 of FIG. 1;

FIG. 3 is an exploded view showing the details of construction of the low carbon steel plates that make up the primary constructional element of the flux band; and

FIG. 4 is a top plan view of one of the steel plates used in conjunction with the magnetic device of the present invention.

## DETAIL DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention comprises an assembly 8 for generating a strong magnetic field that penetrates radially inward into an oil filter canister with sufficient field strength to attract and retain micron and submicron sized metallic particles. The device of the present invention utilizes a series of magnets 10 and 12. Each of the magnets 10 and 12 are identical. The magnets 10 are arranged in a left grouping of four while the magnets 12 are arranged in a right grouping of four magnets. The magnets 10 and 12 can comprise any particular any particular type of magnet. One particular type of magnet is comprised of fully dense, sintered neodymium iron boron. Typically, the magnets will have an intensity of between 15 MG.Oe to thirty-five MG.Oe. The magnets 10 are arranged side-by-side as well as the magnets 12.

It is noticed in referring to FIG. 2 of the drawings that the arrangements of the magnets 10 and 12 is such that the outer surface of magnets 10 and 12 are all located on an arc of a circle 14. The magnets 10 and 12 are to be constructed so that their sidewalls 16 are not perpendicular with the front surface and back surface but are actually angled slightly. The angling of the sidewall 16 is such that when the magnets 10 and 12 are located in an edge abutting position and are abutting one another in a flush relationship, the outer surface of the magnets 10 and 12 will be located on the circle 14. Typically, each magnet 10 and 12 will be coated with a coating such as nickel plating, chrome plating or plastic in order to prevent rust of the magnets 10 and 12. To eliminate the possibility of the magnets 10 and 12 of wearing through the coating 18 which would make the magnets 10 and 12 subject to rust, there may be inserted between each directly abutting magnets 10 and 12 a thin plastic strip 20. A typical material of construction for the strip 20 would be a polypropylene film. The magnets 10 and 12 are mounted within a plastic injection molded frame 22. The magnets 10 and 12 are basically fixed in position within the frame 22.

The frame 22 has a hollow cavity 24. Within the hollow cavity 24 is mounted a stacked series of arcuate shaped low carbon steel plates with there being seven in number of inner plates 26. The inside surface of the magnets 10 and 12 are located in physical contact with the outermost inner plate 26. The inner plates 26 are basically identical and each have a hole 28 which is centrally located along the mid axis 30 which is located at the longitudinal center of the length of each plate 26. There is also used an outer plate 32 which is similar to inner plates 26. Outer plate 32 may be stainless steel or a non-ferrous material. The outer plate 32, instead of a hole 28, includes a pin 34. The pin 34 is to be located within a tight fitting relationship within each of the holes 28 of each of the plates 26 thereby forming an assembled together unit of the inner plate 26 and the outer plate 32 with these plates located in a stacked relationship. The plates are held in their established position by means of the frame 22. The outer surface of the frame 22 includes an enlarged cutout 36.

Because of the arrangement of the series of thin plates 26 and 32, and the fact that the frame 22 is constructed

of a nylon, plastic or rubber material (any moldable non-ferrous material), adjusting movement is permitted which permits the entire device to flex between the dotted line positions 35 and 39 shown in FIG. 2. The outer surface of the magnets 10 and 12 are to be magnetically applied against the exterior surface 38 of a canister wall 33 of a cylindrically shaped oil filter 40. A typical size of a canister wall 33 would be one that has a diameter of three inches. However, this particular size of oil filter 40 can vary somewhat between applications where one application needs an oil filter that has a diameter of 2.8 inches and another application needs a 3.2 inch diameter. When placing of the device of this invention on the exterior surface 38, the device will automatically accommodate to both a smaller diameter or a larger diameter with the outer surface 37 of each of the magnets 10 and 12 being maintained flush against the exterior surface 38 regardless of the diameter of the oil filter 40 by the plates 26 and 32 expanding slightly or conforming slightly forming respectively a circle 14 of greater diameter (dotted line position 39) or a circle 14 of smaller diameter (dotted line position 35). This expanding or compressing causes the plates 26 and 32 to slide relative to each other except in the area of pin 34 and holes 28. The plates 26 and 32 generally vary in thickness from 0.015 to 0.025 of an inch. The use of the plurality of the plates 26 and 32 is what permits the bending or flexing to occur to permit the adjustability between the dotted line positions shown in FIG. 2. The at-rest position of circle 14 would normally be three inches in diameter with the dotted line positions being approximately 2.8 inches and 3.2 inches.

The plate 32 could be constructed of aluminum and also may be ribbed to dissipate heat. It is known that the higher the heat the lower the magnetic energy of the magnets 10 and 12. Therefore, by using of the aluminum in its ribbed configuration, the plate 32 could function as a heat dissipator to keep the magnetic force of the magnets at the highest possible level.

The mid axis 30 comprises a plane dividing of the plates 25 and 32 into halves. Although the frame 22 is described as being nylon, rubber or plastic, it is also to be within the scope of this invention that it could be stainless steel, aluminum or another form of steel. The frame 22 could be molded into one piece or could be constructed to be a plurality of pieces which are secured together by being snapped together, glued together or sonically welded together. It is important that each of the strips 20 be made of a non-metallic material with generally the thickness being about 0.002 of an inch. However, this thickness could vary. There is to be a lanyard 42 in the form of a spring, rope, chain or braided wire that is to be connected between the frame 22 and attached to an exterior structure such as a part of a vehicle frame 43. The frame 43 is to have a threaded hole 45. The lanyard 42 terminates at its free end in a loop 47. A bolt 49 is to be conducted through loop 47 with bolt 49 being secured within hole 45. This means that the assembly 8 is always connected to the vehicle frame and cannot be misplaced when changing the oil filter 40 so the assembly is readily available to be reinstalled on the new oil filter 40.

The number and thickness of the plates 26 and 32 can vary according to the strength of the magnets 10 and 12. The overall mass of the plates 26 and 32 should be sufficient to substantially carry the magnetic flux generated by the magnets 10 and 12 yet should also be sufficiently thin to avoid adding unnecessary weight of the device. One of the functions of the plates 26 and 32 is to provide an effective, low reluctance path for proper retention and redirection of the flux emanating from the magnets 10 and 12. For a magnetic strength of approximately 15MG.Oe, the total thickness of the plates 26 should be about 0.060 of an inch. If the strength of the magnets 10 and 12 is around 35MG.Oe, then the total thickness of the plates 26 should be about 0.100 of an inch.

It has been discovered that as the device fluctuates between the dotted line position in FIG. 2, there is a tight rubbing together of the surfaces between the magnets 10 and between the magnets 12. In order to keep this

rubbing from eliminating of the coating 18 and exposing surfaces of the magnets to moisture and therefore rusting, the strips 20 may be located between the abutted surfaces of the magnets 10 and the magnets 12. However, the use of the strips 20 is deemed to be an option as the coating 18 may constitute sufficient protection.

The oil filter 40 is shown to be the configuration that is manufactured by AC-Delco, General Motors Corporation and used on automotive engines. However, it is to be understood that any similar type of oil filter by any manufacturer would be usable in conjunction with the magnetic device of the present invention.

Typically, the oil filter 40 has a sidewall defined as a canister wall 33 that has the thickness of 0.0014-0.0018 of an inch with thin wall canisters, and 0.0028-0.0032 of an inch with thick wall canisters. The thick wall canisters are designed to carry higher gallons per minute of a flow rate there within. A paper filter element 43 is contained within the canister wall 33 and is generally cylindrical in shape and includes a hollow center core with a center shaft to align with threaded opening 44 which is to be used to attach the canister wall 33 onto its appropriate location within the automobile engine. Threaded opening 44 is mounted within a circular plate 46 which is flushly mounted on the top end of the canister wall 33. The circular plate 46 includes a rubber seal 48 which is used to prevent leakage of oil from within the oil filter 40 as it is being used. Circular plate 46 also includes a number (eight in number) of small holes 50 which are located in an angularly evenly spaced-apart arrangement circumferentially about the threaded opening 44. Oil is to be conducted through the holes 50. The oil filter 40 is generally threaded by the threaded opening 44 onto a suitable filter mount, which is not shown, which is located on the engine, which is also not shown, in a conventional fashion so that the lubricating oil of the engine enters the oil filter 40 through the holes 50 and then exits through threaded opening 44. The oil that is entered through the holes 50 is then conducted through the filter 43 which is used to capture the larger particles of foreign matter contained within the oil. The structure in operation of the oil filter 40 is deemed to be conventional and is commonly used in conjunction with automobiles, trucks, boats and large generator engines.

The magnets 10 and 12 are designed to attract ferrous particles 45 within the oil and hold such against the inside surface 41 of the canister wall 33 of the oil filter 40. These particles 45 are to remain held there for as long as the magnet device of this invention is mounted on the exterior surface 38. When the user deems it is time to change the oil filter 40, the oil filter 40 is to be removed and then the magnet device disengaged as well as the lanyard 42 from the oil filter 40 and then reinserted on a new oil filter with the new oil filter then being reinstalled in position in conjunction with the filter mount of the engine.

In applications of this invention where the assembly 8 is subjected to extreme vibration or impact, such as in racing of engine driven vehicles, marine or aircraft applications, an external adjustable retention band (not shown) can be used to provide additional securing to the oil filter 40. A recessed notch can be formed in the molding of the frame 22 to provide for connection with the adjustable retention band. This structure was shown in the present inventor's own prior U.S. Pat. No. 5,932,108.

Specifically, the foregoing description of the preferred embodiment of the present invention has been limited to the description of using a magnetic device in conjunction with a type of oil filter that is primarily used in automotive engines. As a person skilled in the art can readily perceive, the present invention can be modified to be used with other types of filter canisters and applications to remove entrained ferrous metallic particles from its circulating fluid, in general. Consequently, the scope of the invention should not be limited to the foregoing description but is to be defined by the appending claims and equivalence thereof.

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USPTO PATENT FULL-TEXT AND IMAGE DATABASE

( 1 of 1 )

**United States Patent**  
**Fowler , et al.**

**7,192,520**  
**March 20, 2007**

Magnetic device for attachment on an exterior wall of a filter canister

**Abstract**

A magnetic device for attachment on an exterior wall of a canister where the canister is mounted within a liquid flow path. The purpose of the device is to attract ferrous particulate matter flowing within the flow path and cause that ferrous particulate matter to be fixed to the inside surface of the canister therefore no longer flowing in the flow path. The device has a frame which includes a cavity and within that cavity is mounted a baseplate. Mounted on the baseplate are a pair of blocks. Mounted on each of the blocks is a plurality of magnets with the magnets mounted in a side abutting relationship in conjunction with each block. Between the blocks is located a bridge. The bridge permits limited flexing of the frame so the frame can be used to accommodate to different diameters of canisters within about a one-half inch range.

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**Family ID:** 37863787

**Appl. No.:** 10/866,491

**Filed:** June 10, 2004

**Current U.S. Class:** 210/223; 210/222; 184/6.25

**Current CPC Class:** B01D 35/06 (20130101); B03C 1/0332 (20130101); B03C 1/288 (20130101); B03C 2201/18 (20130101)

**Current International Class:** B01D 35/06 (20060101)

**Field of Search:** ;335/302,303,304,306 ;210/222,223,695 ;209/213,223.2,224 ;184/6.25

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*Claims*

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What is claimed is:

1. A magnetic device adapted for attachment to an exterior wall of a cylindrical filter canister, said magnetic device having a resting curvature, said device comprising: a non-ferrous frame having an internal cavity; a single ferrous baseplate mounted within said cavity, said ferrous baseplate having an exterior surface and an interior surface, said exterior surface to be located further from the canister when installed thereon, said baseplate having a peripheral edge, said peripheral edge being embedded within said frame; a pair of ferrous blocks being mounted on said interior surface, said ferrous blocks being spaced apart forming a bridge between said blocks, said bridge functioning as a fulcrum permitting flexing of said frame to assume different curvatures of said frame from said resting curvature thereby permitting said magnetic device to adjust to different diameters of filter canisters in order to be mounted flush against each of these canisters; a plurality of magnets mounted within said cavity with said magnets being mounted directly adjacent said blocks, said magnets substantially covering said blocks dividing said magnets into a pair of spaced apart zones separated by said bridge, said magnets having an exposed surface adapted to be placed flush against the filter canister, whereby said magnets generate a magnetic force which not only secures said magnetic device to a filter canister but generates a magnetic field within the canister which attracts and holds ferrous particulate matter which is flowing through the liquid flow path which includes the filter canister against an interior sidewall of the canister preventing such from exiting the canister.
2. The magnetic device as defined in claim 1 wherein: said single ferrous baseplate completely covers said cavity, said baseplate having a peripheral edge, said peripheral edge being embedded within said frame.
3. The magnetic device as defined in claim 1 wherein: said frame being enclosing.
4. The magnetic device as defined in claim 1 wherein: each of said ferrous blocks being fixedly secured to said single ferrous baseplate.

5. The magnetic device as defined in claim 1 wherein: each of said ferrous blocks being of the same size.
6. The magnetic device as defined in claim 1 wherein: each of said ferrous blocks being constructed of solid metallic material.
7. The magnetic device as defined in claim 1 wherein: each of said ferrous blocks being constructed of a resilient material within which is impregnated ferrous particulate matter.
8. The magnetic device as defined in claim 7 wherein: said resilient material including plastic.
9. The magnetic device as defined in claim 7 wherein: said resilient material including rubber.
10. The magnetic device as defined in claim 7 wherein: said resilient material including a combination of rubber and plastic.
11. The magnetic device as defined in claim 1 wherein: said resting curvature being the arc of a circle.
12. The magnetic device as defined in claim 1 wherein: said resting curvature being at least one hundred twenty degrees.
13. The magnetic device as defined in claim 1 wherein: said ferrous baseplate being between 0.022 inches to 0.027 inches in thickness.
14. The magnetic device as defined in claim 1 wherein: said blocks being constructed of a resilient material impregnated with ferrous particle matter, a pair of spaced apart inner plates being mounted on said resilient material, said magnets being mounted on said inner plates.
15. The magnetic device as defined in claim 14 wherein: each of said blocks being of the same thickness.
16. The magnetic device as defined in claim 1 wherein: said magnets being mounted directly on said blocks.

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*Description*

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## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The structure of the present invention relates to a device for removing submicron to micron size ferrous particles from moving liquids. The device uses a series of magnets that are mounted within a frame. The device is to be mounted on the exterior surface of a filter canister. A magnetic force attracts ferrous particles entrained within liquid passing through the canister and hold such against the inside surface of the canister preventing continued circulation of these particles within the liquid flow path which includes the canister and thereby prevents these particles from being distributed to be wedged between the working parts of the engine which is to be lubricated by the liquid. The device can also be used to remove ferrous particles from a fuel

line flow path and from the flow path of a crankcase.

## 2. Description of the Related Art

The subject matter of the present invention is deemed to be an improvement over the structure defined within U.S. Pat. Nos. 5,556,540 and 6,554,999. There has been a license agreement by the assignee of the present invention concerning these patents.

Internal combustion engines are used in automobiles, trucks, boats, air compressors, robotics, motorcycles and lawnmowers. All such engines usually include a cylindrical shaped filter canister in conjunction with the lubricating oil flow path of the engine. Also, there may be a second filter canister utilized in conjunction with the fuel flow path of the engine. To eliminate the larger particles of particulate foreign matter that become entrained within the oil due to engine shedding, the engine oil is typically forced through a filter canister which includes a porous filtering medium that is to allow the oil to pass therethrough but allegedly does not allow the passage of the particulate matter. In this manner, the larger particles of particulate matter can be removed from the engine lubricating oil. However, because of this separation technique relies upon filtration through a porous material, particles that are smaller than the openings in the porous material are not removed by the filtering medium. One particularly harmful type of foreign matter in lubricating oil is small metallic (ferrous) particulates which are created by the frictional contact between the moving metal parts of the engine. These particles are actually shards of metal from the metal parts of the engine that are dislodged during the operation of the engine (shedding). These metallic particulates can damage important engine components as such circulate through the engine.

Small metallic particles often have a cross-sectional dimension smaller than the openings in the porous filter material of the filter canister which means that the oil filter is ineffective in the removing of these particles. When not removed by the oil filter, these small metallic particles will freely circulate through the engine until they are finally removed when the oil is changed. Typically, the porous material used in oil filters consists of a fibrous material that has openings greater than twenty microns. Hence, metallic particles with a cross-dimension of twenty microns or smaller are not trapped by the filter. There have been reports that have been prepared in the past that have stated that the vast majority of wear in an engine are caused by metallic particles in the oil that are less than twenty microns. SAE studies have shown that there is a seventy percent wear reduction within an engine when particulates that are fifteen micron and larger are removed. A further huge advance is anticipated when particles down to two micron are removed. This particulate matter is small enough to get wedged between the metallic working members of the engine, and as the engine continues to operate, these metallic particulates causes scoring to occur on the metal working members of the engine. Also, many of these larger metallic particles (twenty microns and above) have sharp edges. Movement of these large particles by the force of the flow of the oil will cause the particles to "slice" like a knife through the filter canister medium producing holes greater than twenty microns thereby decreasing the filtering effectiveness of the filter canister resulting in the filter being ineffective for particulates larger than twenty microns.

The micron and submicron sized metallic particles are the major cause of wear of the moving components of the engine. Specifically, as oil is circulated throughout the engine to lubricate the various moving components, the metallic particles entrained in the oil are carried to be interfaced between the moving components. At these locations, the hardness of the metallic particles causes metal to bear against metal, and reliance is placed solely upon the oil to maintain a lubricating film. When these metallic particles are brought to the interfaces, damage to the adjoining surfaces are likely. This damage eventually results in a degradation

of the close tolerances between the moving parts, causing a loss in operating engine efficiency and more frequent maintenance in the form of repair. By some estimates, these metallic particles are the cause of more than one-half of the wear on the engine.

In the past, one approach taken by the prior art to eliminate these particles is to install a magnetized drain plug in the crankcase of the engine. The magnetized drain plug generates a magnetic field around the drain plug which is to attract and remove some of the metallic particles from the lubricating oil that flow through the crankcase. When the engine is running, the flow of oil through the crankcase is at a high flow rate. The magnetized drain plug has a very weak magnetic field and only collects particles when the flow of the oil stops. So whatever particles happen to be in close proximity of the drain plug are then caused to adhere to the drain plug. Once the engine is restarted, those particles that are on that drain plug are merely washed away and then recirculated throughout the entire engine to then be wedged between the working parts.

Other prior approaches to solve this problem is to attach a magnet to the oil filter canister tending to create a magnetic field within the filter to attract and hold the ferrous particles against the inside wall of the filter. Unfortunately, prior art attempts did not generate a sufficiently strong magnetic field to attract and hold any significant number of metallic particles from the oil to the inside wall of the filter canister. The metallic particles contained in the oil, even if such passed through the magnetic field continued to circulate through the engine. However, the magnetic devices of U.S. Pat. Nos. 5,556,540 and 6,554,999 have a sufficiently strong field to be effective generally between one-hundred twenty five pounds and five hundred pounds of force against the canister.

## SUMMARY OF THE INVENTION

The basic embodiment of magnetic device for attachment on an exterior wall of a filter canister of the present invention comprises incorporating a resting curvature in the magnetic device. The device includes a non-ferrous frame having an internal cavity. A single ferrous baseplate is mounted within the cavity completely covering the cavity. The ferrous baseplate has an exterior surface and an interior surface with the exterior surface being exposed to ambient. The plate has a peripheral edge and this peripheral edge is embedded within the frame. A pair of ferrous blocks are mounted on the interior surface of the plate. The ferrous blocks are spaced apart forming a bridge between the blocks. The bridge functions as a fulcrum permitting flexing of the frame to assume different curvatures of the frame from the resting curvature permitting the magnetic device to be mounted flush against a size range of canister filters. A plurality of magnets are mounted within the cavity with the magnets being mounted against the blocks. The magnets substantially cover the blocks dividing the magnets into a pair of spaced apart zones separated by the bridge. The magnets have an exposed surface adapted to be placed flush against a filter canister. Whereby the magnets generate a magnetic field which not only secures the magnetic device to the filter canister but generates a magnetic field within the canister which attracts and holds ferrous particulate matter which is flowing through a closed fluid flow path against an interior sidewall of the canister preventing such from exiting from the canister.

A further embodiment of the present invention is where the basic embodiment is modified by having the frame to be enclosing.

A further embodiment of the present invention is where the basic embodiment is modified by the ferrous blocks being fixedly mounted onto the single ferrous baseplate.

A further embodiment of the present invention is where the basic embodiment is modified by the ferrous

blocks being of the same size.

A further embodiment of the present invention is where the basic embodiment is modified by the ferrous blocks being defined as being constructed of a solid material.

A further embodiment of the present invention is where the basic embodiment is modified by the ferrous blocks being defined as being constructed of a resilient material impregnated with ferrous particulate matter.

A further embodiment of the present invention is where the just previous embodiment is modified by the resilient material being defined as being a plastic.

A further embodiment of the present invention is where a previous embodiment is modified by the resilient material being defined as being a rubber.

A further embodiment of the present invention is where a previous embodiment is modified by the resilient material being defined as comprising a combination of rubber and plastic.

A further embodiment of the present invention is where the basic embodiment is modified by defining that the resting curvature comprises an arc of a circle.

A further embodiment of the present invention is where the basic embodiment is modified by the resting curvature being defined as comprising one hundred twenty degrees or greater.

A further embodiment of the present invention is where the basic embodiment is modified by having the single ferrous baseplate to be of a thickness of 0.022 to 0.043 inches.

A further embodiment of the present invention is where the basic embodiment is modified by constructing the block of a plastic insulative material which uses a pair of spaced apart inner metallic plates on which the magnets are mounted.

A further embodiment of the present invention is where the just previous embodiment is modified by the plastic insulative blocks being of the same thickness.

## BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention, reference is to be made to the accompanying drawings. It is to be understood that the present invention is not limited to the precise arrangement shown in the drawings.

FIG. 1 is an exploded isometric view of a portion of the first embodiment of magnetic device of the present invention showing how the device is to be constructed;

FIG. 2 is an isometric view of portion of the first embodiment of magnetic device of the present invention showing the portion assembled;

FIG. 3 is an isometric view depicting the forming of the enclosing frame which is to be secured around the portion shown in FIG. 2;

FIG. 4 is an exploded isometric view depicting installation of the magnets in conjunction with the enclosing frame and the portion of the first embodiment of magnetic device of the present invention;

FIG. 5 is an isometric view of the completely assembled first embodiment of magnetic device of the present invention;

FIG. 6 is a transverse cross-sectional view taken along line 6--6 of FIG. 5;

FIG. 7 is an isometric view of a portion of the second embodiment of magnetic device of the present invention not mounted in an enclosing frame;

FIG. 8 is an isometric view of the second embodiment of magnetic device of the present invention showing the device completely assembled with the enclosing frame; and

FIG. 9 is a cross-sectional view of the second embodiment of magnetic device of the present invention taken along 9--9 of FIG. 8.

#### DETAILED DESCRIPTION OF THE INVENTION

Referring particularly to FIGS. 1-6 of the drawings, there is shown the first embodiment 10 of the present invention. First embodiment 10 utilizes a baseplate 12. The baseplate 12 is to be constructed of a low-carbon steel with a thickness generally in the range of 0.022 to 0.027 inches. The baseplate 12 is to be coated with a galvanic coating for corrosion resistance. The baseplate 12 could also be made of stainless steel. The baseplate 12 has a resting curvature that is an arc of a circle. A typical circle would be the arc of a circle that has a diameter of between two and one-half to seven inches. The baseplate 12, if it was placed flat before it had the resting curvature, would assume a rectangular configuration. The baseplate 12 has a peripheral edge 14. Baseplate 12 has an exterior surface 13 and an interior surface 15.

The baseplate 12 has a transverse center area that is to be defined as the bridge 16. The baseplate 12 has four in number of holes 18, 20, 22 and 24. The holes 18, 20, 22 and 24 are each to respectively connect with a rivet 26, 28, 30 and 32. The rivets 26 and 28 pass through respective holes 18 and 20 to secure the block 34 to the baseplate 12. The rivets 30 and 32 pass respectively through holes 22 and 24. Block 34 is identical to block 44. Blocks 34 and 44 are mounted on the interior surface 15. The blocks 34 and 44 are to be constructed of steel and having a thickness of 0.096 to 0.101 inches. Each of the blocks 34 and 44 are basically rectangular in shape except, of course, having the curvature. The blocks 34 and 44 are to be made of low-carbon sheet steel. The blocks 34 and 44 are coated with a zinc plating as a corrosion preventor. Typical thickness of the coating is between 0.0001 and 0.0002 inches thick.

The assembly shown in FIG. 2 is then to be placed within a mold 46. Into the mold 46 is to be poured hot liquid plastic 48 through an injection port 50. When the plastic 48 hardens and the mold 46 is opened, there is to be removed from the mold a plastic frame 52 which has on its inner surface a pair of spaced apart openings 54 and 56 which are separated by means of a bridge strip 58.

There is to be placed within the opening 54 five in number of strip magnets 60. There is also to be placed

within the opening 56 five in number of strip magnets 62. Each of the strip magnets 60 and 62 are identical. It is to be understood that the number of the strip magnets 60 and 62 employed can vary without departing from the scope of this invention. The strip magnets 60 and 62 have a slight transverse curvature that is equal to the resting curvature of the baseplate 22 which is also assumed in the frame 52. The magnets 60 and 62 are to be made of neodymium and will have a strength of around forty to forty-five Mg.Oe. The longitudinal axis of the strip magnets 60 and 62 are located transversely within the frame 52. Each of the strip magnets 60 and 62 are magnetically held onto the blocks 34 and 44.

The use of the blocks 34 and 44 as well as the baseplate 12 is to direct the magnetic energy in a direction outward from the inside surface of the first embodiment 10. There will be essentially no magnetic energy being emitted from the exterior surface 13 of the baseplate 12. Typically, the magnets will have a longitudinal length of one and three quarters to two inches, a width of approximately five-sixteenths of an inch and a thickness of three thirty seconds of an inch. However, it is considered to be within the scope of this invention that the size of the magnets can readily vary. It is to be noted by noticing FIG. 6 that the peripheral edge 14 of the baseplate 12 is embedded within the frame 52.

In referring to FIG. 5, it can be seen that the frame 52 is capable of movement, as indicated by the dotted lines in FIG. 5. This movement is depicted by arrows 61 and 63 so that the frame 52 can be used to accommodate to a range of diameter variations of the filter canister 65. Typically, the adjustment would be so as to have the first embodiment 10 to accommodate to about a one-half inch variance in diameter of the filter canister 65. This adjustment is permitted by a flexing due to the creating of a fulcrum within the bridge 16 of the baseplate 12. The bridge strip 58 extends entirely across the bridge 16. The thickness of the blocks 34 and 44 prevents bending or flexing of the baseplate 12 in the area of the blocks 34 and 44 but flexing will be permitted in the area of bridge 16 due to the thinness of the baseplate 12. There is also a gap located between the blocks 34 and 44 which is located at the bridge 16.

Referring particularly to FIGS. 7-9 of the drawings, there is shown the second embodiment 64 of magnetic device of the present invention. The second embodiment 64 includes a baseplate 66 which is basically identical to baseplate 12. The baseplate 66 has a transverse center section defined as a bridge 68 which is basically identical to the bridge 16. There are a pair of blocks 70 and 72 which are mounted by rivet fasteners 74, 76, 78 and 80 to the baseplate 66. On the exterior surface of the block 70 there is mounted an inner plate 82, and on the exterior surface of the block 72 is mounted an inner plate 84. The inner plates 82 and 84 are constructed to be of the same thickness as the baseplate 66 and also is formed to have an inherent resting curvature which the baseplate 66 also has. Each of the blocks 70 and 72 are to be identical and are to be constructed of either a rubber, a plastic or a combination of rubber and plastic material within which is embedded ferrous particulate matter. The thickness of the blocks 70 and 72 will normally be within the range of 0.040 to 0.065 inches. Typically, the percentage of ferrous material within each of the blocks 70 and 72 will be about ninety percent. The sandwich configuration shown in FIG. 7 is then to be placed within the mold, as previously described, and the frame 86 is then formed around this sandwich configuration. The peripheral edge 88 of the sandwich configuration of FIG. 7 will be embedded within the frame 86, as is clearly shown in FIG. 9.

After extraction of the frame 86 from the mold, there is located a pair of cavities 90 and 92. Cavity 90 is separated from cavity 92 by a bridge strip 94. The bridge strip 94 is located directly adjacent the bridge 68. It is to be understood that the frame 86 which includes the bridge strip 94 will be constructed entirely of a resilient material, such as plastic. Also by observing of FIG. 8, it is to be seen that the second embodiment 64 is adjustable with a fulcrum occurring in the area of the bridge 68, as is clearly represented by movement of



the second embodiment 64 to the dotted line configuration shown in FIG. 8. Arrows 96 and 98 depict movement of the second embodiment 64 to the expanded configuration which would be to accommodate a slightly larger diameter in size of cylindrical filter canister 104 on which the second embodiment 64 is to be located.

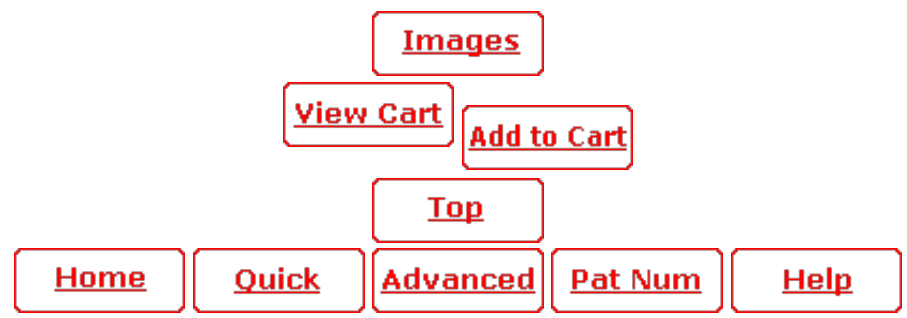
Within the cavity 90, there is to be located five in number of strip magnets 100, and within the cavity 92, there are to be mounted five in number of strip magnets 102. The strip magnets 100 and 102 are basically identical and are identical to the previously described strip magnets 60 and 62.

Within both the first embodiment 10 and the second embodiment 64 there is created a pair of zones of magnetism by the strip magnets 60, 62, 100 and 102. The zones of magnetism in the first embodiment 10 are separated by the bridge strip 58, and in the second embodiment 64 they are separated by the bridge strip 94. It is these zones of magnetism that emit an exceedingly powerful magnetic force that is extended to within the fluid flow path that is being conducted through the oil filter canister 65 or 104.

The discussion included in this patent is intended to serve as a basic description. The reader should be aware that the specific discussion may not explicitly describe all embodiments possible and alternatives are implicit. Also, this discussion may not fully explain the generic nature of the invention and may not explicitly show how each feature or element can actually be representative of a broader function or of a great variety of alternative or equivalent elements. Again, these are implicitly included in this disclosure. Where the invention is described in device-oriented terminology, each element of the device implicitly performs a function. It should also be understood that a variety of changes may be made without departing from the essence of the invention. Such changes are also implicitly included in the description. These changes still fall within the scope of this invention.

Further, each of the various elements of the invention and claims may also be achieved in a variety of manners. This disclosure should be understood to encompass each such variation. Particularly, it should be understood that as the disclosure relates to elements of the invention, the words for each element may be expressed by equivalent apparatus terms if only the function or result is the same. Such equivalent, broader, or even more generic terms should be considered to be encompassed in the description of each element or action. Such terms can be substituted where desired to make explicit the implicitly broad coverage to which this invention is entitled. It should be understood that all actions may be expressed as a means for taking that action or as an element which causes that action. Similarly, each physical element disclosed should be understood to encompass a disclosure of the action which that physical element facilitates. Such changes and alternative terms are to be understood to be explicitly included in the description.

\* \* \* \* \*



# **EXHIBIT B**

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### INTELLECTUAL PROPERTY LICENSE AGREEMENT

This Intellectual License Agreement (the "Agreement") is entered into as of October 18, 2013 ("Effective Date"), by and between Filtermag International, Inc., a Delaware corporation, with offices at 7440 East Karen Drive, Suite 400, Scottsdale, AZ 85260 ("Licensor"), and FilterMag, Inc., a Delaware corporation, with offices at 7440 East Karen Drive, Suite 400, Scottsdale, AZ 85260 ("Licensee"). From time to time, Licensor and Licensee shall be collectively referred to as "Parties," and individually as a "Party."

### AGREEMENT

In consideration of the premises and of the mutual covenants set forth herein, the receipt and sufficiency of such consideration is acknowledged by the Parties, the Parties agree as follows:

**1. Agreement.** Pursuant to this Agreement, Licensor shall provide and license all intellectual property, product designs and specifications, technology, and all related assets and rights of Licensor currently existing and to be developed in the future by Licensor, including without limitation the patents listed on Exhibit A, ("Licensor Intellectual Property") to Licensee, and the Parties shall have the rights and obligations as set forth in this Agreement.

#### **2. Grant of License.**

**2.1. License Grant.** Subject to the rights retained by Licensor in Section 2.4 below, Licensor hereby grants to Licensee, during the Term (as defined below) only, the following rights, to the extent of Licensor's licensable rights, ~~worldwide~~, exclusive, non-transferable, non-sublicensable (except a permitted pursuant to Section 2.3 below) perpetual, non-assignable, license fee-bearing, and revocable license to use, make derivative works, integrate, duplicate, promote, demonstrate, market, brand, distribute, offer for sale, sell, and sub-license (as permitted pursuant to Section 2.3 below) (collectively, "Use") Licensor Intellectual Property for any purpose (the "License"). Nothing in this Section 2, or as otherwise set forth in this Agreement, shall grant Licensor the right to grant a license to the Licensor Intellectual Property, for any purpose, to any other third party.

#### **2.2. Additional Agreements.**

**2.2.1. Marketing.** Licensee shall use its commercially reasonable efforts to market, distribute and/or sell, or cause to be marketed, distributed and or sold, products created using the Licensor Intellectual Property during the Term (as defined below) of this Agreement.

**2.2.2. Legal Compliance.** Licensee agrees that it will comply with all applicable laws, rules, and regulations relating to its manufacture, processing, production, use, advertisement, marketing, sale, and distribution of Licensor Intellectual Property and that it will not at any time take any action that would cause Licensor or Licensee to be in violation of any of such applicable laws, rules, and regulations.

**2.2.3. Patent Marking.** Licensee agrees to mark any products manufactured or otherwise produced using Licensor Intellectual Property and ~~sold in the United States and~~, to the extent practical, identify all such products with all applicable United States patent numbers.

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2.3. Sublicenses. Licensee shall have the right to grant sublicenses under this Agreement to its Affiliates without the prior written consent of Licensor. Licensee shall have no right to grant sublicenses to any other third party. All sublicensees shall execute and be subject to a sublicensing agreement with terms no less protective of Licensor than this Agreement.

2.4. Termination. Licensor shall have the right (but not the obligation), at Licensor's sole election, to terminate this Agreement in the event Licensee, either directly or indirectly, contests or challenges the validity, enforceability, or ownership by Licensor of (or any of Licensor's rights, title and interest in and to) any of the Licensor Intellectual Property (or any of Licensor's rights, title and interest in and to) any of the Licensor Intellectual Property (or any registrations or applications thereof) in any action, claim, cross-claim, counterclaim, or defense before any court, arbitrator, or administrative agency anywhere.

3. Change of Control. Upon the occurrence of a Change of Control of Licensee, Licensee shall pay any amounts remaining under the License Fee (defined below), plus the Purchase Price (defined below) to Licensor.

3.1. "Change of Control" means:

3.1.1. any transaction or series of transactions whereby any person becomes the beneficial owner, directly or indirectly, of capital stock of Licensee representing fifty percent (50%) or more of the combined voting power of Licensee's then-outstanding capital stock through one or more direct transfers of through any of the following:

3.1.1.1. any merger, consolidation or liquidation of Licensee in which Licensee is not the continuing or surviving entity or pursuant to which capital stock would be converted into cash, securities or other property, other than (i) a merger or consolidation with a wholly-owned subsidiary, (ii) a reorganization of Licensee in a different jurisdiction, or (iii) any other transaction in which there is no substantial change in the holders of capital stock of Licensee;

3.1.1.2. any merger or consolidation of Licensee with or into another entity or any other corporate reorganization, if more than fifty percent (50%) of the combined voting power of the continuing or surviving entity's securities outstanding immediately after such merger, consolidation or other reorganization is owned by persons who were not holders of capital stock of Licensee immediately prior to such merger, consolidation or other reorganization; or

3.1.2. the sale, transfer or other disposition of all or substantially all of the assets of Licensee.

4. Sales Materials. At Licensor's cost, Licensor shall provide Licensee copies of Licensor's standard product sales literature and materials ("Licensor Sales Materials"), and further authorizes Licensee to produce copies of Licensor Sales Materials.

5. Administrative Fees. Until this Agreement is terminated, Licensee shall pay to Licensor an annual administrative fee of Ten Thousand and no/100 U.S. Dollars (US\$10,000.00) each year (the "Administrative Fees") beginning on the Effective Date and continuing throughout the Term (as defined below) on each

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subsequent anniversary of the Effective Date. Licensor shall use a portion of the Administrative Fees to pay any and all maintenance payments due with respect to the Licensor Intellectual Property.

**6. Royalty Payments.** Licensee shall make the following payments to Licensor (together, the "Royalty Payment"):

- 6.1. Initial Fee. As consideration for Licensor's grant of the License to Licensee, Licensee will assume those Licensor accounts payable listed on Exhibit B hereto.
- 6.2. Initial Royalty Payment. An initial royalty payment of One Hundred Thousand and no/100 U.S. Dollars (US\$100,000.00) (the "Initial Royalty Payment") on the Effective Date;
- 6.3. Periodic Royalty Payments. During the entire Term of this Agreement, royalties during the periods of the Term and, after the "Initial Payment", based on the percentages of Gross Revenue (the "Royalties") set forth on Exhibit C hereto (the "Royalty Payments"). The Royalty Payments shall be payable to Licensor within fifteen (15) days of the end of each fiscal quarter, with the first payment due on January 15, 2014, until Licensor has received an aggregate amount, including the Initial Royalty Payment, but not the Initial Fee or Administrative Fees, of One Million Two Hundred Fifty Thousand and no/100 U.S. Dollars (US\$1,250,000.00) (the "License Fee"). The Parties agree and understand that the License Fee may be prepaid in whole or in part at any time or from time to time without penalty. Licensee will provide a report detailing consolidated Gross Revenue and its calculation of related Royalty Payments with each Royalty Payment.
- 6.4. Purchase Right. Upon payment in full of the License Fee, Licensee's obligation to pay any Royalty Payment to Licensor shall immediately cease, and, upon Licensor's receipt from Licensee of a payment of Ten Thousand and no/100 U.S. Dollars (US\$10,000.00) per unexpired patent then-included within Licensor Intellectual Property (the "Purchase Price"), the Licensor Intellectual Property shall become the property of Licensee, any right, title or interest in such Licensor Intellectual Property shall convey to Licensee and this Agreement shall terminate. If Licensee does not pay the Purchase Price, this Agreement will continue in accordance with its terms. For purposes of this Agreement, "Gross Revenue" means all amounts received by (i) Licensee and (ii) any and all Affiliates of Licensee, in each case during the Term, excluding sales or use taxes, returns, chargebacks, and reimbursements, as determined by Licensee's then-current accountant.
- 6.5. Payment Form. All payments owed to Licensor by Licensee pursuant to this Agreement shall be remitted by wire transfer to a bank account or accounts designated by Licensor in United States Dollars (USD) with an email confirmation of the wire sent to Licensor.
- 6.6. Late Payments. Any payment required under this Agreement that is not paid on or before the due date set forth in this Agreement shall accrue interest at the rate of one and on-half percent (1.5%) per month (eighteen percent (18%) per annum) until paid in full.
- 6.7. Taxes. Licensee shall be responsible for payment of all bank transfer charges, taxes, duties and other charges imposed by any taxing authority (other than Licensor's income taxes) in connection with all payments from Licensee to Licensor. All amounts payable to Licensor under this

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Agreement shall be grossed up for all required applicable withholdings related to such charges, taxes or duties.

**7. Books and Records; Audit.** Licensee agrees that it will, and will cause any and all sublicensees to, keep during the Term and for two (2) years after the expiration or termination of this Agreement correct and complete books and records regarding the sales, promotion and distribution of the Licensor Intellectual Property and Gross Revenues. Such books and records must be in sufficient detail to establish complete compliance by Licensee with all the provisions of this Agreement. A certified public accountant mutually acceptable to Licensor and Licensee will have the right to inspect, copy and audit at reasonable times (but not more than once during any calendar year), and upon reasonable advance notice to Licensee both during and after the Term, such books and records or other documents. Licensor agrees that the information contained in Licensee's books and records is Licensee's Confidential Information and will protect it in accordance with the requirements set forth in this Agreement. Any inspection or audit will be paid for by Licensor. In the event that the inspection or audit shows that Licensee has under-reported Gross Revenues and/or underpaid Royalties by five percent (5%) or more for any given period, then Licensee must pay to Licensor within thirty (30) days after receipt of the audit report, the deficiency in the Royalty payment, plus interest thereon at the rate of one and one-half percent (1.5%) per month from the original due date to the date of payment, and must also pay the actual cost of such inspection or audit, including without limitation Licensor's reasonable attorneys' fees, reasonable accountant's fees and other reasonable costs. Licensor will cause any final audit to be conducted within one (1) year of termination or expiration of this Agreement.

**8. Patent Infringement.**

- 8.1. Licensor Intellectual Property. Licensor owns and shall own any and all right, title, and interest in and to the Licensor Intellectual Property. Licensee shall, and shall cause each of its employees and agents to, take all actions and to execute, acknowledge, and deliver all instruments or agreements necessary for the perfection, maintenance, enforcement, or defense of the rights of Licensor with respect to the Licensor Intellectual Property.
- 8.2. Notice of Infringement. Licensee shall promptly notify Licensor in writing of any alleged infringement of the Licensor Intellectual Property which comes to Licensee's attention and of any available evidence of such infringement.
- 8.3. Enforcement by Licensor. Licensor shall have the right, but not the obligation, to take all reasonable steps Licensor, in its sole discretion deems prudent and necessary to its own interests, to enforce Licensor's rights to the Licensor Intellectual Property against infringers. Licensor may, at its sole discretion, join in any such suit brought by the Licensee. In the event any infringement action is commenced or defended solely by Licensee, Licensee shall be entitled to keep all recovery of damages for infringement, provided that Licensee has paid all amounts due hereunder when due. In the event of any joint prosecution or defense, Licensor shall have its expenses of litigation reimbursed to it first out of any recovery; thereafter, Licensee shall have its expenses of litigation reimbursed to it out of any recovery.
- 8.4. Enforcement by Licensee. If Licensor is not able or not willing to take action against an infringer, Licensee may at its own expense take action against such infringer. Licensor may permit, at its sole

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discretion, if legally necessary, the use of its name and may execute documents and do acts as may be reasonably necessary for the purpose of taking such action, at Licensee's expense. Licensee shall keep Licensor informed of the progress of the action, and Licensor shall be entitled to engage separate counsel at its own expense. Notwithstanding the foregoing, Licensor, at its sole discretion, may choose to join any action by Licensee at its own expense. If Licensee undertakes, with Licensor's consent, to enforce and/or defend any rights to the Licensor Intellectual Property by litigation in any country, and Licensee recovers damages in the litigation, the award shall be applied first to satisfy Licensor's unreimbursed reasonable out-of-pocket expenses of the litigation, next Licensor shall be reimbursed for any amount that would have been due to Licensor under this Agreement, then to reimburse Licensee for its reasonable out-of-pocket expenses of the litigation.

8.5. Declaratory Judgment. In the event that a declaratory judgment action alleging invalidity or non infringement of any of the Licensor Intellectual Property shall be brought against Licensee, Licensee shall notify Licensor in writing immediately upon receiving notice thereof, and the Parties shall consult concerning the action to be taken. Licensor, at its option, shall have the right within sixty (60) days after commencement of such action to intervene and take over the sole defense of the action at its expense. Licensor shall have no obligation to defend any such action, but Licensor shall have the right to join in the defense of any such suit or action by Licensee, and in such event, shall pay fifty percent (50%) of the cost of such suit or action.

8.6. Cooperation. Any infringement suit which either Party may institute to enforce rights to the Licensed Intellectual Property pursuant to this Agreement, or in a suit for patent infringement that is brought by a third party against Licensor or Licensee, that either Party or both Parties are required or elect to defend, the other Party hereto shall, at the request and the expense of the Party initiating such suit (or if any such Party is defending such suit at the expense of Licensee), cooperate in all reasonable respects and, to the extent reasonably possible, have its employees and agents testify when requested and make available relevant records, papers, information, samples, specimens, and the like.

## 9. Term and Termination.

9.1. Term. This Agreement shall be effective as of the Effective Date stated above and shall remain in effect for a period of the earlier of (i) seven (7) years ("Term") or (ii) until such time as this Agreement is terminated pursuant to Section 2.4 above or this Section 9. This Agreement can only be extended or renewed by a separate written agreement executed by Licensee and Licensor prior to termination of this Agreement.

9.2. Termination by Licensor. In addition to termination rights set forth in Section 2.4 above, Licensor shall have the right to terminate this Agreement on the occurrence of any one or more of the following events:

9.2.1. Failure of Licensee to make any payment when due, if such failure is not cured within thirty (30) calendar days after written notice of the failure is received by Licensee ("Licensee Cure Period");

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9.2.2. The material breach by Licensee of any material term of this Agreement, if such failure is not cured within the Licensee Cure Period; or

9.2.3. Licensee (i) substantially discontinues its business operations; (ii) makes an assignment for the benefit of its creditors; (iii) files for or becomes bankrupt or insolvent, is unable to pay its debts when due in the ordinary course of business; or (iv) has an encumbrancer take possession or receiver or administrator appointed in respect of a substantial part of its assets; or

9.3. Termination by Licensee. Licensee shall have the right to immediately cease Royalty Payments to Licensor in the event Licensor materially breaches the terms of the License granted in Section 2 of this Agreement. Licensee shall provide written notice to Licensor of the occurrence of such an event, and Licensor shall have a period of thirty (30) calendar days following receipt of such notice ("Licensor Cure Period") to cure such event. In the event such event is not cured within the Licensor Cure Period, Licensee may terminate this Agreement in its sole discretion, and may continue to suspend the Royalty Payments.

9.4. Effect of Termination.

9.4.1. Cancellation, expiration, or termination of this Agreement for any reason shall be without prejudice to Licensor's right to receive all payments, equities, license fees, and other payments due and accrued and unpaid as of the effective date of such termination, cancellation, or expiration, and shall not prejudice any cause of action or claim of Licensor accrued or to accrue on account of any breach or default by Licensee.

9.4.2. In the event this Agreement is terminated for any reason whatsoever, ~~Licensee shall not have any right to return of any payments of any kind theretofore made by it to Licensor pursuant to this Agreement.~~

9.4.3. Upon any termination of this Agreement, Licensee shall immediately stop using any and all of the Licensor Intellectual Property. The foregoing obligation of Licensee is absolute and not subject to any right of Licensee to raise any claims or other rights against Licensor. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, UPON EXPIRATION, CANCELLATION, OR TERMINATION OF THIS LICENSE AGREEMENT FOR ANY REASON, LICENSEE AGREES TO IMMEDIATELY RETURN AND SURRENDER ANY RIGHTS IT MAY HAVE, IF ANY, IN ALL OF THE LICENSED INTELLECTUAL PROPERTY.

9.4.4. The provisions of Sections 5, 6, 8.1, and 10 through 14 of this Agreement shall remain in full force and effect notwithstanding any termination of this Agreement.

#### **10. Obligations, Representations, and Warranties.**

10.1. Representations, and Warranties of Licensor. Licensor hereby represents and warrants to Licensee the following:

10.1.1. Licensor represents and warrants that the execution, delivery, and performance by Licensor of this Agreement does not and will not conflict with, or result in any violation of or default under, (i) any provision of the governing documents of Licensor; (ii) any material law, ordinance, rule, regulation, judgment, order, decree, or license applicable to Licensor; or (iii) any contract to which Licensor is a party,



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the violation of which would have a material adverse effect on Licensor. No consent, approval, order, or authorization of, or registration, declaration, or filing with, any court, administrative agency, or commission or other governmental authority or instrumentality, domestic or foreign, is required by or with respect to Licensor in connection with Licensor's execution, delivery, or performance of this Agreement.

10.1.2. Licensor represents and warrants that there are no claims, actions, suits, or other proceedings pending, or to the knowledge of Licensor, threatened, which, if adversely determined, would adversely affect the ability of Licensor to consummate the transactions contemplated by this Agreement or perform its obligations hereunder.

10.1.3. Licensor represents and warrants that Licensor has all requisite power and authority to enter into and perform its obligations under this Agreement and to carry out the transactions contemplated hereby. This Agreement has been duly executed and delivered by Licensor and constitutes a valid and binding obligation of Licensor enforceable in accordance with its terms.

10.1.4. Licensor represents and warrants that Licensor is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware.

10.2. Licensor Covenants.

10.2.1. Conduct of Business. From and after the date hereof, Licensor's shall not conduct any business or enter into any new contracts or agreements with third parties, other than as may be necessary to administer and enforce this Agreement or any related agreement, including without limitation, that certain Asset Purchase Agreement dated as of October 15, 2013 by and between Licensor and Licensee.

10.2.2. Voluntary Bankruptcy. Licensor shall not file a voluntary petition seeking protection under any bankruptcy, insolvency, reorganization, moratorium or other laws of general application affecting enforcement of creditors' rights or make an assignment for the benefit of creditors unless it has first provided Licensee with ninety (90) days' prior written notice of its intent to make such a filing or assignment.

10.2.3. Claims Against Licensor. Within ten (10) days of receipt of oral or written notice from a creditor or other third party that such creditor or other third party intends to pursue legal remedies available to such party to recover on a debt or other claim alleged by such third party to be owing by Licensor, Licensor shall deliver written notice of such claim to Licensee. Licensor shall cooperate with Licensee in order to settle or otherwise resolve any such claim.

10.3. Obligations, Representations, and Warranties of Licensee. Licensee hereby represents and warrants to Licensor the following:

10.3.1. Licensee hereby represents and warrants that there are no claims, actions, suits, or other proceedings pending, or to the knowledge of Licensee, threatened, which, if adversely determined, would adversely affect the ability of Licensee to consummate the transactions contemplated by this Agreement or perform its obligations hereunder.

10.3.2. Licensee hereby represents and warrants that it has all requisite power and authority to enter into and perform its obligations under this Agreement and to carry out the transactions contemplated

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hereby. This Agreement has been duly executed and delivered by Licensee and constitutes a valid and binding obligation of Licensee, enforceable in accordance with its terms.

10.3.3. Licensee represents and warrants that Licensee is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware.

10.4. Warranty Disclaimer. Licensee possesses the expertise and skill in the technical areas in which the Licensor Intellectual Property are involved necessary to make, and has made, its own evaluation of the capabilities, safety, utility, and commercial application of the Licensor Intellectual Property. Licensee has not relied on any oral or written statements or any other materials provided by Licensor in connection with this Agreement and the decision to enter into this Agreement is based solely on Licensee's independent due diligence.

**ACCORDINGLY, EXCEPT AS SET FORTH IN SECTION 10.1 OF THIS AGREEMENT, NEITHER LICENSOR NOR ANY OF ITS DIRECTORS, OFFICERS, SHAREHOLDERS, EMPLOYEES OR AGENTS (COLLECTIVELY FOR THE PURPOSES OF THIS SECTION 10.3, "LICENSOR") MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND WITH RESPECT TO ANY OF THE LICENSOR INTELLECTUAL PROPERTY OR THE USE THEREOF, AND EXPRESSLY DISCLAIMS ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ANY OTHER IMPLIED WARRANTIES WITH RESPECT TO THE CAPABILITIES, SAFETY, UTILITY, OR COMMERCIAL APPLICATION OF THE LICENSOR INTELLECTUAL PROPERTY OR ANY WARRANTY OR REPRESENTATION THAT ANYTHING MADE, USED, OR SOLD UNDER ANY LICENSE GRANTED IN THIS AGREEMENT IS OR WILL BE FREE FROM INFRINGEMENT OF PATENTS, TRADEMARKS, AND OTHER RIGHTS OF THIRD PARTIES. LICENSEE ASSUMES THE ENTIRE RISK AS TO PERFORMANCE OR DISPOSITION OF LICENSOR INTELLECTUAL PROPERTY.**

## 11. Indemnification.

11.1. Indemnification by Licensee. Licensee shall indemnify, defend, and hold harmless Licensor and its Affiliates, officers, directors, employees, agents, successors, and assigns, from and against all claims, demands, liabilities, damages, and costs including, without limitation, its reasonable attorneys' fees and other costs of defense, arising from or relating to (a) Licensee's breach of any terms of this Agreement; (b) any claims of infringement of the intellectual property rights of any third party, (c) the Use or attempted sublicense of the Licensor Intellectual Property by Licensee or any of its Affiliates, officers, directors, employees, agents, successors, and assigns; in each case, whether asserted under a tort or contractual theory or any other legal theory.

11.2. Indemnification by Licensor. Licensor shall indemnify, defend, and hold harmless Licensee, and its Affiliates, officers, directors, employees, agents, successors, and assigns, from and against all claims, demands, liabilities, damages, and costs, including, without limitation, its reasonable attorneys' fees and other costs of defense, arising from or related to Licensor's breach of any terms of this Agreement; whether asserted under a tort or contractual theory or any other legal theory.

11.3. Indemnification Procedure. The Party seeking indemnification ("Indemnitee") shall provide the other Party ("Indemnifying Party") prompt written notice of any knowledge it may have of such an infringement or other indemnity claim, and the Indemnitee shall reasonably cooperate in the defense and settlement of any such claim. The Indemnifying Party shall have the right to control the defense, negotiation and settlement of any such claim and the Indemnifying Party shall pay all damages and costs awarded by a court of competent jurisdiction against Indemnitee arising out of such claim or the amount of any settlement to which the Indemnifying Party may agree.

## 12. Proprietary Information.

12.1. Proprietary Rights. Licensee hereby acknowledges that the Proprietary Information is owned by Licensor and, except as provided in this Agreement, that Licensee has no right of ownership in the Proprietary Information. Additionally, Licensee hereby agrees that the Proprietary Information licensed hereunder and all rights therein are the proprietary property of Licensor and that such proprietary rights shall remain vested in Licensor. Licensee hereby agrees that it will protect the rights of Licensor in the Proprietary Information and agrees that it will not sell, sublicense or otherwise make the Proprietary Information available to any unauthorized party.

12.2. For purposes of this Agreement, "Proprietary Information" shall mean any and all non-public knowledge, data or information of Licensor, including all trade secret, patent, copyright, mask work and other intellectual property rights throughout the world, wherever and whenever arising.

## 13. Confidentiality.

13.1. Confidential Information. Each Party acknowledges that it will have access to certain confidential information of the other Party, including the terms and conditions of this Agreement. "Confidential Information" includes all information identified by a Party as confidential, including but not limited to, a Party's information regarding its business, employees, financial condition, products, operation,

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or other financial and business matters. Each Party's Confidential Information shall (i) remain the sole property of that Party and (ii) be used by the other Parties only as described herein and may not be disclosed, provided or otherwise made available to any other third party except that such Confidential Information may be disclosed to the other Parties' employees or agents who have a need to know in the scope of their work during the time they are performing services under this Agreement and are under the other Parties' security and control. Confidential Information does not include (i) information that the recipient can establish was already known to the recipient at the time it was disclosed in connection with this Agreement, (ii) information that is developed independently by the recipient or received from another third party lawfully in possession of the information and having no duty to keep the information confidential, (iii) information that becomes publicly known other than by a breach of this Agreement, or (iv) information disclosed in accordance with a valid court order or other valid legal process. Each Party agrees to hold the Confidential Information of each other Party in strictest confidence and not to copy, reproduce, distribute, publish or disclose such Confidential Information to any person except as expressly permitted by this Agreement.

#### **14. Miscellaneous.**

14.1. Notices. All notices under this Agreement required to be given hereunder shall be given in writing and shall be delivered either by hand, by electronic mail or facsimile, by nationally recognized overnight courier, fees pre-paid by sender, or by U.S. certified mail at the address set forth on the signature page below, or at such other address as may be designated from time to time. Any such notice shall be deemed delivered upon the earlier of actual receipt or three (3) days after deposit of such notice, properly addressed and delivery fees paid, with the overnight courier, or by facsimile.

14.2. Successors and Assigns; Assignment. Licensee shall not assign any of its rights, obligations or privileges (by operation of law or otherwise) hereunder without the prior written consent, which shall not be unreasonably withheld, of Licensor. Licensor may assign its rights, obligations or privileges (by operation of law or otherwise) hereunder provided that such assignment does not impair or burden the rights of Licensee under this Agreement. The terms and conditions of this Agreement shall inure to the benefit of and be binding upon the respective permitted successors and assigns of the Parties. Nothing in this Agreement, express or implied, is intended to confer upon any Party other than the Parties hereto or their respective successors and assigns any rights, remedies, obligations, or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement.

14.3. Governing Law. This Agreement and all disputes arising under or related to it shall be governed by the laws of the state or province of organization of the defending Party, without regard to choice of law principles that would allow the application of another state or province. The Parties agree that, in the event either party initiates any action or proceeding relating to this Agreement in a court, such action or proceeding shall be filed in a court of competent jurisdiction in the State of Arizona, and the Parties will submit to the jurisdiction of that court with respect to such action or proceeding.

14.4. Severability. Should any provision of this Agreement be held by a court of competent jurisdiction to be illegal, invalid or unenforceable, such provision shall be deemed modified to the extent necessary (consistent with the intent of the Parties) to eliminate the illegal, invalid or unenforceable effect or to delete such provision if modification is not feasible, and the remaining terms shall continue in full force and effect.

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14.5. Entire Agreement; Amendment and Waiver. This Agreement and any documents expressly referred to in this Agreement constitute the entire agreement between the Parties and supersede all prior understandings and agreements, whether written or oral, that may relate to the subject matter of this Agreement. Any term of this Agreement may be amended, modified, or waived only with the written consent of the Parties or their respective permitted successors and assigns. Any amendment or waiver affected in accordance with this Section 14.5 shall be binding upon the Parties and their respective successors and assigns.

14.6. Headings. Headings used in this Agreement are for convenience only and shall not be considered in construing or interpreting this Agreement.

14.7. Counterparts. This Agreement may be executed simultaneously in two or more counterparts, each of which will be considered an original, but all of which together will constitute one and the same instrument.

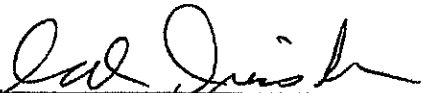
[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

Execution Copy

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the Effective Date and agree to be legally bound by all terms and conditions contained herein.

**LICENSOR:**

**FILTERMAG, INC.**, a Delaware corporation

By:   
Name: Gordon Dreisbach  
Title: Board Chairman

7440 East Karen Drive, Suite 400  
Scottsdale, AZ 85260

**LICENSEE:**

**FILTERMAG INTERNATIONAL, INC.**, a  
Delaware corporation

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

7440 East Karen Drive, Suite 400  
Scottsdale, AZ 85260

Execution Copy

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the Effective Date and agree to be legally bound by all terms and conditions contained herein.

**LICENSOR:**

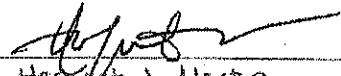
**FILTERMAG, INC.**, a Delaware corporation

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

7440 East Karen Drive, Suite 400  
Scottsdale, AZ 85260

**LICENSEE:**

**FILTERMAG INTERNATIONAL, INC.**, a  
Delaware corporation

By:   
Name: Herbert J. Martin  
Title: President and CEO

7440 East Karen Drive, Suite 400  
Scottsdale, AZ 85260

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**EXHIBIT A**

**LICENSED PATENTS**

Patent Number	Title	Issue Date
5556540	Magnetic assembly for a closed pressurized flow path of lubricating oil	September 17, 1996
6554999	Magnetic assembly to applied against an oil filter	April 29, 2003
7192520	Magnetic device for attachment on an exterior wall of a filter canister	March 20, 2007

App. #

10866491

Renewed 4/2/18  
Good till 3/2021



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**EXHIBIT C**

**ROYALTIES**

Licensee will pay Royalties to Licensor as a percentage of Gross Revenues each year during the Term in accordance with the chart below.

<b>Year</b>	<b>Percentage</b>
1	4%
2-7	5%

# **EXHIBIT C**



DETWILLER DIGIACOMO & PISARUK PLLC

January 15, 2020

FilterMag International, Inc.  
Attn: David Neshat, CEO  
7641 East Gray Road, Suite E  
Scottsdale, AZ 85260

Re: Intellectual Property License Agreement, dated October 18, 2013 (the "License Agreement"), by and between FilterMag International, Inc. ("International") and FilterMag, Inc. ("FilterMag")

Dear Mr. Neshat:

Capitalized terms used but not otherwise defined in this letter shall have the meanings assigned to them in the License Agreement.

We notified you by letter dated November 21, 2019 that International failed to pay the \$10,000 Administrative Fee that was due to FilterMag on October 18, 2019 as required by Section 5 of the License Agreement (the "Administrative Fees"). To date, International has failed to pay the Administrative Fees.

Pursuant to Section 6.3 of the License Agreement, International is obligated to pay a quarterly royalty payment to FilterMag within fifteen (15) days of the end of each fiscal quarter (the "Quarterly Payment"). FilterMag has not received from International the Quarterly Payment for the fourth quarter of 2019.

By this letter, FilterMag exercises its right to terminate the License Agreement pursuant to Section 9.2.1 thereof, effective immediately. FilterMag demands International immediately cease and desist all Use of Licensor Intellectual Property. FilterMag further demands International promptly pay to FilterMag the Administrative Fees and the Quarterly Payment.

International's continued Use of Licensor Intellectual Property after the date hereof will be an infringement of FilterMag's intellectual property rights, and if International continues such Use, FilterMag will be forced to take further legal action to protect its intellectual property rights. FilterMag reserves its right to pursue further legal action to collect the Administrative Fees, the Quarterly Payment and any other amounts due pursuant to the License Agreement.

Sincerely,

A handwritten signature in black ink, appearing to read 'Shelley DiGiacomo', written over a horizontal line.

Shelley Detwiller DiGiacomo

cc: Thomas E. Askland

**SHELLEY DETWILLER DIGIACOMO** — Partner