IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OHIO

MODUMETAL, INC. Plaintiff, v. **PARKER HANNIFIN CORP.** Defendant.	)	**Civil Action No. 1:24-cv-2053** **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff, Modumetal, Inc. ("Modumetal") by and through its undersigned counsel, for its Complaint against Defendant Parker Hannifin Corp. ("Parker Hannifin"), alleges as follows:

Parker Hannifin pulled a bait-and-switch on Modumetal. Parker Hannifin wanted Modumetal's revolutionary and patented NanoGalv® corrosion resistant plating technology, but did not want to pay for it. Corrosion is a multi-trillion dollar a year problem. Parker Hannifin's existing corrosion technology only provided steel parts a 1,000 hour lifetime, whereas Modumetal's technology tripled that to 3,000 hours. Under the guise of a collaboration agreement, Parker Hannifin received access to Modumetal's revolutionary plating technology and knowhow. In addition, Parker Hannifan had access to Modumetal's plating equipment. After receiving confidential access to Modumetal's technology, which Modumetal was willing to license, Parker Hannifin allowed the collaboration agreement to lapse. After the agreement lapsed, Parker Hannifin released its infringing ToughShield® Plus coating based on the technology Modumetal shared with Parker Hannifin. Modumetal brings this action to stop Parker Hannifin's ongoing appropriation of its technology.

NATURE OF THE ACTION

1. This is a civil action for infringement of United States Patent Nos. 10,253,419 and 11,242,613 (collectively, the "Patents-in-Suit") arising under the Patent Laws of the United States, 35 U.S.C. §§ 271 *et seq*.

THE PARTIES

2. Plaintiff Modumetal is a company existing and organized under the laws of Delaware with a principal place of business at 20124 Broadway Ave. Building A, Snohomish, WA 98296.

3. On information and belief, Defendant Parker Hannifin is a company existing and organized under the laws of Ohio with a principal place of business at 6035 Parkland Boulevard, Cleveland, OH 44124.

JURISDICTION AND VENUE

4. Plaintiff incorporates and realleges all of the above paragraphs as though fully set forth herein.

5. This is an action for patent infringement arising under the patent laws of the United States, including 35 U.S.C. §§ 271 *et seq*. The jurisdiction of this Court over the subject matter of this action is proper under 28 U.S.C. §§ 1331 and 1338(a).

6. Venue is proper in this District pursuant to 28 U.S.C. §§ 1391(b), (c), and 1400(b). As noted above, on information and belief, Defendant Parker Hannifin is an entity organized and existing under the laws of Ohio, with a principal place of business in Cleveland, Ohio.

7. This Court also has personal jurisdiction over Defendant because Defendant conducts business in this District by at least offering for sale its infringing products marketed under

the ToughShield® Plus trade name, which are accessible in this District, and because infringement has occurred and continues to occur in this District.

8. Defendant has committed and continues to commit acts of infringement in this District.

BACKGROUND OF THE INVENTION

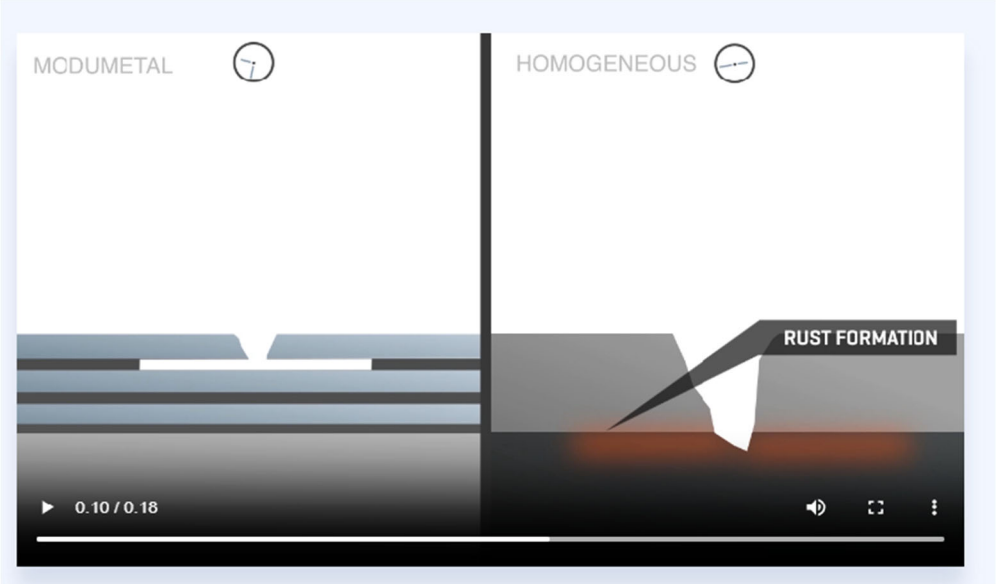
9. Corrosion of metals occurs naturally by electrochemical reactions between a metal object and the environment. These reactions reduce the structural integrity of the metal, resulting in mechanical failure that can be sudden and catastrophic. Despite the development of different types of anti-corrosion approaches to protect metals, the corrosion of metals remains a significant economic problem worldwide, costing approximately $2.2 trillion dollars per year.

10. Some anti-corrosion coating methods suppress corrosion by applying a layer that is more corrosion resistant than the underlying metal substrate material. Common examples include wax that is applied to automobiles and epoxies that coat marine parts. Other coating methods rely on application of a sacrificial layer that is preferentially corroded to spare the metal substrate from corrosion. For example, “galvanized” steel garbage cans are manufactured by applying a sacrificial zinc layer to the surface of the steel garbage can. During normal use, the sacrificial zinc layer preferentially corrodes, thereby delaying the corrosion of the steel garbage can and extending its useful life.

11. More advanced forms of sacrificial corrosion resistant coatings involve the use of nanolaminates that can dramatically increase corrosion resistance and, correspondingly, the useful life of the parts they coat. Modumetal’s patented NanoGalv® coatings are an example of nanolaminate coatings that can significantly improve corrosion resistance. NanoGalv® coated parts are produced using electrochemical processes in which a metal part is immersed in a series of

baths, at times with accompanying exposure to a modulated electrical current. Nanolaminate coatings formed by these processes are comprised of several extremely thin metal alloy layers (typically less than about 1 micron thick) with different chemical compositions. In these instances, the alloy layers are stacked like alternating layers of cake and frosting in a multi-layer cake. For instance, the nanolaminate coating may have an "ABAB" sandwich structure in which the letter "A" refers to one alloy and "B" refers to another alloy. Because these alloys are chemically different, one of the layers may be more resistant to corrosion ("more noble") than the other. The difference in nobility results in preferential lateral or sideways corrosion of the less noble alloy, which diverts the corrosion away from the underlying metal part. By diverting the corrosion away from the underlying metal part, it protects the metal substrate.

12. By contrast, a sacrificial coating that does not have the NanoGalv® patented structure of alternating alloy layers will corrode both sideways and up-and-down or perpendicular, so that the corrosion will reach the underlying substrate more easily. The figure below shows corrosion for a nanolaminate layer (left side) and a conventional protective metal layer (right side):



The Patents-in-Suit

13. Plaintiff incorporates and realleges all of the above paragraphs as though fully set forth herein.

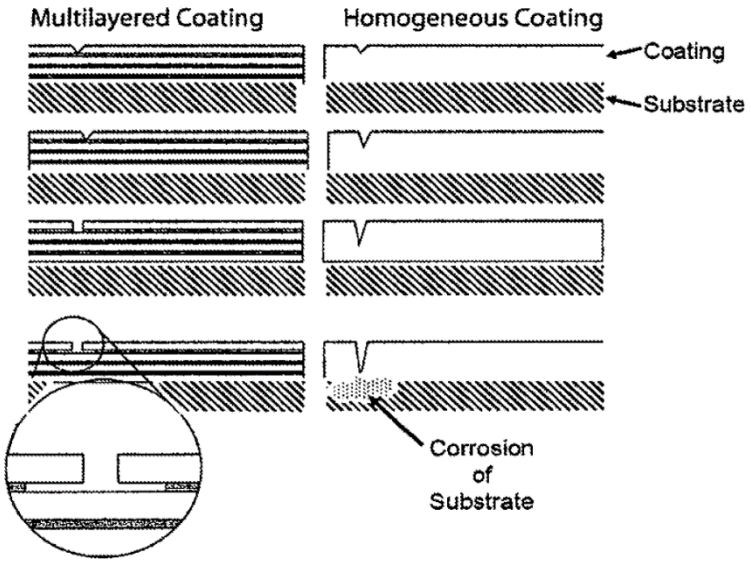
U.S. Patent 10,253,419

14. U.S. Patent 10,253,419 ("'419 Patent"), titled "Electrodeposited, Nanolaminate Coatings and Claddings for Corrosion Protection," issued on April 9, 2019. **Exhibit 1**. Ms. Christina Lomasney is named as the sole inventor of the '419 Patent.

15. The '419 Patent is a continuation of Application No. PCT/US/2010/037856 and issued from U.S. Patent App. No. 11/147,806, filed on December 8, 2011. The '419 Patent expires on December 7, 2031.

16. The '419 Patent generally relates to improved anti-corrosion coatings and methods of forming such coatings. The coatings comprise metal alloys that form extremely thin coatings in a multilayered nanolaminate structure. Advantageously, the nanolaminate structure induces corrosion to proceed both within the nanolaminate structure and laterally to the surface of the underlying metal substrate. In this way, corrosion into the metal substrate is suppressed.

17. The following diagram from the '419 Patent schematically illustrates the lateral corrosion that results from using a multilayered "nanolaminate" coating. As seen on the left-hand side of the diagram, preferential corrosion of the dark layers, as compared to the light layers, results in corrosion of the dark layers, while maintaining the integrity of the underlying multilayers and metal substrate.



See '419 Patent, Figure 1.

18. By contrast, when the homogenous coating is compromised by corrosion, the corrosion propagates perpendicularly towards the surface of the underlying metal substrate, resulting in corrosion of the substrate.

19. The '419 Patent in particular relates to a coating that includes alternating alloy layers that are deposited onto a substrate or mandrel. The individual alloy layers must include at least one weight percent of at least one of the following four elements: cobalt (Co), iron (Fe), nickel (Ni) and zinc (Zn). The alloys have different susceptibilities to corrosion and must meet certain thickness criteria (about 5 nanometers to about 1000 nanometers). In addition, total thickness of the alloy coating layer must be in the range of 5 microns to 50 microns, inclusive.

U.S. Patent 11,242,613

20. U.S. Patent 11,242,613 ("'613 Patent"), titled "Electrodeposited, nanolaminate Coatings and Claddings for Corrosion Protection," issued on February 8, 2022. **Exhibit 2**. Ms. Christina Lomasney is named as the sole inventor of the '613 Patent.

21. The ’613 Patent is a divisional application of U.S. Application No. 14/729,020, filed on June 2, 2015, (now U.S. Patent No. 10,544,510), which in turn is a divisional application of U.S. Application No. 13/314,948, filed on December 8, 2011, which issued as the ’419 Patent. As noted above the ’419 Patent is a continuation Application of PCT/US2010/037856, which was filed on Jun. 8, 2010. The ’613 Patent expires on December 7, 2031.

22. The ’613 Patent relates to a method for forming a coating that includes alternating alloy layers that are deposited onto a substrate or mandrel. The individual alloy layers must include at least one weight percent of at least one of the following four elements: cobalt (Co), iron (Fe), nickel (Ni) and zinc (Zn). The alloys have different susceptibilities to corrosion and must meet certain thickness criteria (about 5 nanometers to about 1000 nanometers). In addition, total thickness of the alloy coating layer must be in the range of 5 microns to 50 microns, inclusive.

Defendant’s Infringing Activities

23. In 2015, Parker Hannifin announced a product known as “ToughShield®” or “TS1000,” a coating that purportedly is capable of protecting the surfaces of various components, such as steel fittings, for up to 1,000 hours during a neutral salt spray test. On information and belief, the ToughShield® coating is made of a zinc metallic layer. **Exhibit 3**. Following the launch of its ToughShield® coating product, Parker Hannifin approached Modumetal to explore alternative anti-corrosion layers and sought access to the technology relating to Modumetal’s NanoGalv® coatings, which are covered by the Patents-in-Suit.

24. Accordingly, in November 2016, Modumetal and Parker Hannifin entered into a Collaboration Agreement.

25. Modumetal and Parker Hannifin both anticipated that the Collaboration Agreement would graduate into a more comprehensive joint development agreement.

26. Pursuant to the Collaboration Agreement, Parker Hannifin received confidential materials from Modumetal detailing the methods, materials, and equipment required to form Modumetal's zinc/nickel nanolaminate alloy layers. In addition, Modumetal personnel visited Parker Hannifin's manufacturing line to explain the process and equipment changes that would have to be made in order to be able to start producing Modumetal's zinc/nickel nanolaminate layers. Modumetal also made available to Parker Hannifin one of its proprietary "Nanopro" devices, which can generate Modumetal's proprietary electronic wave forms to electrochemically deposit nanolaminates on metal articles, such as pipes and fittings.

27. After receiving these confidential materials from Modumetal, Parker Hannifin allowed the Collaboration Agreement to terminate on October 1, 2017. Then, in 2021, Parker Hannifin launched its own anti-corrosion zinc/nickel nanolaminate coating under the registered trademark "ToughShield® Plus." **Exhibit 4**. The ToughShield® Plus coatings are advertised as the new standard anticorrosion coating applied to virtually all of the steel fittings sold by Parker Hannifin, indicating that the earlier zinc-based ToughShield® coating technology essentially was supplanted by the zinc/nickel ToughShield® Plus technology. Parker Hannifin states that the ToughShield® Plus coatings protect against corrosion of the underlying substrate by up to 3,000 hours, which is three times longer than the original ToughShield® technology that was launched prior the collaboration with Modumetal. **Exhibit 4**. Parker Hannifin now advertises that nearly all of its steel tube fittings are equipped with ToughShield® Plus anti-corrosion coatings. **Exhibit 5**.

28. The Parker Hannifin ToughShield® Plus anti-corrosion coatings contain zinc/nickel alloy layers. Adjacent zinc/nickel alloy layers in the ToughShield® Plus anti-corrosion coatings contain different relative amounts of zinc and nickel. As shown below and in the attached exhibits, the ToughShield® Plus anti-corrosion coatings infringe the Patents-in-Suit.

COUNT I

Infringement of U.S. Patent No. 10,253,419

29. Plaintiff incorporates and realleges all of the above paragraphs as though fully set forth herein.

30. The ’419 Patent is valid and enforceable.

31. Parker Hannifin has infringed, and continues to infringe at least claim 1 of the ’419 Patent under 35 U.S.C. § 271(b) by selling Parker Hannifin’s ToughShield® Plus products. According to Parker Hannifin’s website and marketing materials, ToughShield® Plus is their “standard zinc-nickel plating on all steel tube fittings and adapters worldwide.”

32. By way of example, Parker Hannifin’s ToughShield® Plus Elbow Fitting Seal Lok infringes at least claim 1 of the ’419 Patent as illustrated in the claim chart that is attached as **Exhibit 6** and which is incorporated by reference as if fully set forth herein.

33. As another example, Parker Hannifin’s ToughShield® Plus Seal-Lok O-Ring Face Seal Tube nut fitting infringes at least claim 1of the ’419 Patent as illustrated in the claim chart that is attached as **Exhibit 7**. and which is incorporated by reference as if fully set forth herein.

34. As yet another example, Parker Hannifin’s Ferulok Flareless fitting infringes the claims at least claim 1 of the ’419 Patent as illustrated in the claim chart that is attached as **Exhibit 8** and which is incorporated by reference as if fully set forth herein.

35. And as another example, Parker Hannifin’s 24 FF5OLO-S Seal-Lok O-Ring Face Seal Tube Fitting at least claim 1 of the ’419 Patent as illustrated in the claim chart that is attached as **Exhibit 9**.

36. Modumetal or its predecessors-in-interest have satisfied all statutory obligations required to collect pre-filing damages for the full period allowed by law for infringement of the '419 patent.

COUNT II

Infringement of U.S. Patent No. 11,242,613

37. Plaintiff incorporates and realleges all of the above paragraphs as though fully set forth herein.

38. The '613 Patent is valid and enforceable.

39. Parker Hannifin has infringed, and continues to infringe at least claim 1 of the '613 Patent under 35 U.S.C. § 271(b) by selling Parker Hannifin's ToughShield® Plus products. According to Parker Hannifin's website and marketing materials, ToughShield® Plus is their "standard zinc-nickel plating on all steel tube fittings and adapters worldwide."

40. By way of example, Parker Hannifin's ToughShield® Plus Elbow Fitting Seal Lok infringes at least claim 1 of the '613 Patent as illustrated in the claim chart that is attached as **Exhibit 11** and which is incorporated by reference as if fully set forth herein.

41. As another example, Parker Hannifin's ToughShield® Plus Seal-Lok O-Ring Face Seal Tube nut fitting infringes at least claim 1 of the '613 Patent as illustrated in the claim chart that is attached as **Exhibit 11**. and which is incorporated by reference as if fully set forth herein.

42. As yet another example, Parker Hannifin's Ferulok Flareless fitting infringes the claims at least claim 1 of the '613 Patent as illustrated in the claim chart that is attached as **Exhibit 12** and which is incorporated by reference as if fully set forth herein.

43. And as another example, Parker Hannifin's 24 FF5OLO-S Seal-Lok O-Ring Face Seal Tube Fitting at least claim 1 of the '613 Patent as illustrated in the claim chart that is attached as **Exhibit 13**.

44. Modumetal or its predecessors-in-interest have satisfied all statutory obligations required to collect pre-filing damages for the full period allowed by law for infringement of the '613 patent.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests that this Court enter judgment against Parker Hannifin, granting Plaintiff the following relief:

A. A judgment holding Parker Hannifin liable for infringement of the Patents-in-Suit;

B. Damages resulting from Parker Hannifin's infringement of the Patents-in-Suit in an amount to be proven at trial, but no less than a reasonable royalty, such damages to be increased up to three times as a result of Parker Hannifin's willful infringement, together with pre-judgment and post-judgment interest;

C. An injunction permanently enjoining Parker Hannifin under 35 U.S.C. § 283 from infringing the Patents-in-Suit;

E. A judgment holding this to be an exceptional case, and an award to Plaintiff of its attorneys' fees and costs pursuant to 35 U.S.C. § 285; and

F. Such other and further relief as the Court deems just and equitable.

DEMAND FOR JURY TRIAL

Pursuant to Federal Rule of Civil Procedure 38(b), Plaintiff hereby demands a trial by jury on all issues so triable.

Dated: November 22, 2024

Respectfully submitted,

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