

UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF TEXAS

WELDING INNOVATION SOLUTIONS,  
LLC,

Plaintiff,

v.

AMERICAN AXLE &  
MANUFACTURING, INC.

Defendant.

Case No. 2:13-CV-51

**JURY TRIAL DEMANDED**

**COMPLAINT FOR PATENT INFRINGEMENT**

This is an action for patent infringement in which Welding Innovation Solutions, LLC (“Welding” or “Plaintiff”) makes the following allegations against American Axle & Manufacturing, Inc. (“AAM”).

**PARTIES**

1. Plaintiff Welding is a limited liability company organized and existing under the laws of the State of Texas with its principal place of business at 3301 W. Marshall Ave., Suite 303, Longview, Texas 75604.

2. On information and belief, Defendant AAM is a Delaware corporation with its principal place of business at One Dauch Drive, Detroit, Michigan 48211. AAM may be served with process via its registered agent, The Corporation Trust Company, Corporation Trust Center, 1209 Orange Street, Wilmington, Delaware 19801.

**JURISDICTION AND VENUE**

3. This action arises under the patent laws of the United States, Title 35 of the United States Code. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

4. Venue is proper in this district under 28 U.S.C. §§ 1391(c) and 1400(b). On information and belief, AAM has transacted business in this district, and has committed acts of patent infringement in this district. Consequently, on information and belief, relevant documents and witnesses are present in this district.

**COUNT I**  
**INFRINGEMENT OF U.S. PATENT NO. 5,828,028**

5. Plaintiff is the exclusive license holder of United States Patent No. 5,828,028 (“the ‘028 Patent”), entitled “Hot Forging Method and Apparatus,” – including all rights to recover for past and future acts of infringement. The ‘028 Patent was duly and lawfully issued on October 27, 1998. A true and copy of the ‘028 Patent is attached at **Exhibit A**.

6. AAM directly infringes at least Claims 1 and 5 of the ‘028 Patent, by way of example only, and without limitation on Welding’s assertion of infringement by AAM of other claims of the ‘028 Patent. Claim 1 of the ‘028 Patent reads as follows:

1. A joining apparatus for hot forging first and second workpieces together, wherein the first workpiece is provided with a deformable rivet and the second workpiece is provided with an aperture sized to receive the deformable rivet, the apparatus comprising:

an assembly fixture for supporting the first and second workpieces to be joined with the deformable rivet of the first workpiece extending through the aperture in the second workpiece;

a resistance heating power supply having a pair of power output terminals for providing power output, one of which being in electrical communication with the first workpiece;

a hot forging electrode connected to the other one of the resistance heating power supply power output terminals and movable relative to the deformable rivet;

an actuator affixed to the hot forging electrode for shifting the hot forging electrode into and out of engagement with the deformable rivet;

a pressure regulator cooperating with the actuator for varying a force exerted by the hot forcing electrode on the deformable rivet;

a transducer having an output indicative of position of the hot forging electrode to determine rivet deformation; and

a controller cooperating with the transducer, the pressure regulator, and the resistance heating power supply, wherein the controller regulates the power output of the resistance heating power supply as a function of rivet deformation and regulates the force exerted by the hot forging electrode on the deformable rivet when the hot forcing electrode reaches a predetermined position to ensure that the deformable rivet properly deforms.

Claim 5 of the '028 reads as follows:

5. A method of hot forging first and second workpieces together, wherein the first workpiece is provided with a deformable rivet and the second workpiece is provided with an aperture sized to receive the deformable rivet, the method comprising:

placing the first and second workpieces together with the deformable rivet of the first workpiece extending through the aperture in the second workpiece to engage the first workpiece;

shifting a hot forging electrode into engagement with the deformable rivet, the hot forging electrode being movable relative to the deformable rivet;

heating the deformable rivet with power output from a resistance heating power supply in electrical communication with the hot forging electrode and the first workpiece;

monitoring position of the hot forging electrode to determine rivet deformation; and

regulating the power output of the resistance heating power supply as a function of rivet deformation and regulating a force exerted by the hot forging electrode on the deformable rivet when the hot forging electrode reaches a predetermined position to ensure that the deformable rivet properly deforms.

7. Upon information and belief, AAM infringes at least Claim 1 in this judicial district, and elsewhere in the United States. Acts of infringement include, without limitation, making, using, offering for sale, and/or selling within the United States, and/or importing into the United States, at least an apparatus for use in manufacturing certain of its axle products via resistance welding and then hot forging first and second workpieces. (“the Accused System”).

Accordingly, AAM is liable for infringement of at least Claim 1 of the '028 Patent under 35 U.S.C. § 271(a).

8. On information and belief, in approximately 2004, NewCor Bay City ("NewCor") developed the technology for use by AAM in the manufacture of the accused axle products. In 2008, the assets and spare parts business of NewCor were purchased by Wright-K Technology, Inc. The process NewCor developed for American Axle is described in the publication "NBC-9593," attached at **Exhibit B**. NBC-9593 is available at: <http://www.baycity.newcor.com/NBC9593.htm>.

9. With respect to the elements of Claim 1, on information and belief, the Accused System constitutes "a joining apparatus for hot forging first and second workpieces together, wherein the first workpiece is provided with a deformable rivet and the second workpiece is provided with an aperture sized to receive the deformable rivet" as made evident by the description and pictures in NBC-9593, attached hereto at **Exhibit B**. The '028 Patent describes a "deformable rivet" as a "plug, ball, or the like made of metal or other material suitable for welding to [the] axle tube []." **Exhibit A**, col. 3, ll. 25-27. On information and belief, the Accused System utilizes a deformable rivet (called a "slug"), which is inserted into an aperture to receive said rivet. This is made clear by the description in NBC-9593, which states, "[t]he assembly is transferred to the weld stations where slugs are automatically feed [sic] and inserted into holes in the cast iron carrier." **Exhibit B**, p. 1.

10. The Accused System further comprises the next element of Claim 1 in that it requires "an assembly fixture for supporting the first and second workpieces to be joined with the deformable rivet of the first workpiece extending through the aperture in the second

workpiece.” On information and belief, the Accused System has an assembly fixture as claimed, as shown in the figures and described in NBC-9593. **Exhibit B**, pp. 1-2.

11. The Accused System further comprises the next element of Claim 1 in that it requires “a resistance heating power supply having a pair of power output terminals for providing power output, one of which being in electrical communication with the first workpiece.” On information and belief, the Accused System has the claimed resistance heating power supply, as according to NBC-9593, “[t]he slug then goes through a two step process, first the slug is projection welded to the axle tube, second it is heated and hot upset to fill the hole.” **Exhibit B**. “Hot upset” is generally considered to be the application of pressure to weld and is part of the resistance welding process.

12. The Accused System further comprises the next element of Claim 1 in that it requires “a hot forging electrode connected to the other one of the resistance heating power supply power output terminals and movable relative to the deformable rivet.” On information and belief, this element must necessarily be present in the Accused System.

13. The Accused System further comprises the next element of Claim 1 in that it requires “an actuator affixed to the hot forging electrode for shifting the hot forging electrode into and out of engagement with the deformable rivet.” On information and belief, the Accused System utilizes an actuator to shift the hot forging electrode into engagement with the deformable rivet as shown in **Exhibit C**, p. 3 (Rear axle assembly and slug welding line replaces arc puddle welds with resistance slug welds) which is a figure taken from <http://www.baycity.newcor.com/PDF/new492.pdf>.

14. The Accused System comprises the next element of Claim 1 in that it requires “a pressure regulator cooperating with the actuator for varying a force exerted by the hot forging

electrode on the deformable rivet.” On information and belief, the Accused System uses hydraulics, which would include a pressure regulator, to vary the force exerted by the electrode on the rivet.

15. The Accused System further comprises the next element of Claim 1 in that it requires “a transducer having an output indicative of position of the hot forging electrode to determine rivet deformation.” On information and belief, the Accused System uses a transducer, e.g., a linear variable distance transducer, or “LVDT.”

16. The Accused System further comprises the final element of Claim 1 in that it requires “a controller cooperating with the transducer, the pressure regulator, and the resistance heating power supply, wherein the controller regulates the power output of the resistance heating power supply as a function of rivet deformation and regulates the force exerted by the hot forging electrode on the deformable rivet when the hot forcing electrode reaches a predetermined position to ensure that the deformable rivet properly deforms.” On information and belief, the LVDT monitors the weld in real time with a feedback loop to the controller that modifies the power output of the resistance heating power supply and, upon proper deformation, releases the pressure of the weld tip as well.

17. On information and belief, AAM has also been and is now infringing at least the method of Claim 5 of the ‘028 Patent in this judicial district, and elsewhere in the United States. Specifically, AAM practices each and every step of Claim 5 in the manufacture of several of its axles and their components. Infringements by AAM include, without limitation, making, using, offering for sale, and/or selling within the United States at least its axle components for General Motor Company’s rear-wheel drive light trucks and sport utility vehicles manufactured in North America, and the importation and sale in the United States, of these axle components. Such

infringing methods include, for example, the methods used to manufacture GM's rear axle and front four-wheel drive and all-wheel drive (4WD/AWD) axle components for these vehicle platforms, axle components for Chrysler Group LLC's heavy-duty Ram full-size pickup trucks and its derivatives, and axle components, driveline systems and other related components to Volkswagen AG, Audi AG, Scania AB, Mack Trucks Inc., PACCAR Inc., Nissan Motor Co., Ltd., Harley-Davidson, Tata Motors, Ford Motor Company, Deere & Company and other original equipment manufacturers. Upon information and belief, AAM imports several of these axle components into the United States from its facilities in Silao Guanajuato, Mexico. Accordingly, AAM is liable for infringement of at least Claim 5 of the '028 Patent under 35 U.S.C. § 271(g). On information and belief, AAM also practices the infringing methods within the United States. Thus, AAM is also liable for infringement of at least Claim 5 of the '028 Patent under 35 U.S.C. § 271(a).

18. With respect to Claim 5, on information and belief, using the Accused System, AAM practices a “method of hot forging first and second workpieces together, wherein the first workpiece is provided with a deformable rivet and the second workpiece is provided with an aperture sized to receive the deformable rivet” as is evident by the description and pictures in NBC-9593, attached hereto at **Exhibit B**. The '028 Patent describes a “deformable rivet” as a “plug, ball, or the like made of metal or other material suitable for welding to [the] axle tube [.]” **Exhibit A**, col. 3, ll. 25-27. On information and belief, AAM utilizes a deformable rivet (called a “slug”), which is inserted into an aperture to receive said rivet. This is made evident by the description in NBC-9593, which states, “[t]he assembly is transferred to the weld stations where slugs are automatically feed [sic] and inserted into holes in the cast iron carrier.” **Exhibit B**, p. 1.

19. AAM further practices the next element of Claim 5 that requires “placing the first and second workpieces together with the deformable rivet of the first workpiece extending through the aperture in the second workpiece to engage the first workpiece” as is evident by the description and pictures in NBC-9593, attached hereto at **Exhibit B**. The ‘028 Patent describes a “deformable rivet” as a “plug, ball, or the like made of metal or other material suitable for welding to [the] axle tube [].” **Exhibit A**, col. 3, ll. 25-27. On information and belief, AAM utilizes a deformable rivet (called a “slug”), which is inserted into an aperture to receive said rivet. This is made evident by the description in NBC-9593, which states, “[t]he assembly is transferred to the weld stations where slugs are automatically feed [sic] into holes in the cast iron carrier.” **Exhibit B**, p. 1.

20. AAM further practices the next element of Claim 5 that requires “shifting a hot forging electrode into engagement with the deformable rivet, the hot forging electrode being movable relative to the deformable rivet.” On information and belief, AAM utilizes an actuator to shift the hot forging electrode into engagement with the deformable rivet. **Exhibit C**, p. 3.

21. AAM further practices the next element of Claim 5 by requiring “heating the deformable rivet with power output from a resistance heating power supply in electrical communication with the hot forging electrode and the first workpiece.” On information and belief, AAM performs a “hot upset” process, as according to NBC-9593, “[t]he slug then goes through a two step process, first the slug is projection welded to the axle tube, second it is heated and hot upset to fill the hole.” **Exhibit B**, p. 1.

22. AAM further practices the next element of Claim 5 by requiring “monitoring position of the hot forging electrode to determine rivet deformation.” On information and belief,

AAM utilizes a transducer to monitor the position of the hot forging electrode to determine rivet deformation, e.g., a linear variable distance transducer, or “LVDT.”

23. AAM further practices the final element of Claim 5 by requiring “regulating the power output of the resistance heating power supply as a function of rivet deformation and regulating a force exerted by the hot forging electrode on the deformable rivet when the hot forging electrode reaches a predetermined position to ensure that the deformable rivet properly deforms.” On information and belief, the LVDT monitors the weld in real time with a feedback loop to the controller that modifies the power output of the resistance heating power supply and, upon proper deformation, releases the pressure of the weld tip as well.

24. As a result of AAM’s infringement of the ’028 Patent, Plaintiff has suffered monetary damages and is entitled to a money judgment in an amount adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant, together with interest and costs as fixed by the court, and Plaintiff will continue to suffer damages in the future unless Defendant’s infringing activities are enjoined by this Court.

**PRAYER FOR RELIEF**

WHEREFORE, Plaintiff respectfully requests that this Court enter a judgment:

1. In favor of Welding that AAM has infringed the ’028 Patent;
2. Requiring AAM to pay Welding its damages, costs, expenses, and prejudgment and post-judgment interest for AAM’s infringement of the ’028 Patent as provided under 35 U.S.C. § 284;
3. Finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Welding its reasonable attorneys’ fees; and

4. Granting Welding any and all other relief to which Welding may show itself to be entitled.

**DEMAND FOR JURY TRIAL**

Welding, under Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable by right.

Dated: January 23, 2013

/s/ Darrell G. Dotson

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