



US00D632619S

(12) **United States Design Patent**  
**Noble et al.**

(10) **Patent No.:** **US D632,619 S**  
(45) **Date of Patent:** **\*\* \*Feb. 15, 2011**

(54) **SUSPENSION SPRING**

FOREIGN PATENT DOCUMENTS

(75) Inventors: **Shawn D. Noble**, Naperville, IL (US);  
**Christopher W. Forrest**, Auburn, IN (US)

DE 973418 2/1960

(Continued)

(73) Assignee: **Hendrickson USA, L.L.C.**, Itasca, IL (US)

OTHER PUBLICATIONS

Hendrickson, Kenworth Truck Company, Haulmaax Suspensions, Mar. 9, 2009.

(\*\*) Term: **14 Years**

(Continued)

(21) Appl. No.: **29/344,282**

*Primary Examiner*—T. Chase Nelson

*Assistant Examiner*—Michael A Pratt

(22) Filed: **Sep. 25, 2009**

(74) *Attorney, Agent, or Firm*—McDonnell Boehnen Hulbert & Berghoff LLP

**Related U.S. Application Data**

(60) Division of application No. 29/329,359, filed on Dec. 12, 2008, now Pat. No. Des. 603,303, which is a continuation-in-part of application No. 12/045,069, filed on Mar. 10, 2008.

(57) **CLAIM**

The ornamental design for a suspension spring, as shown and described.

(51) **LOC (9) Cl.** ..... **12-16**

(52) **U.S. Cl.** ..... **D12/160**

(58) **Field of Classification Search** ..... D12/400,  
D12/340, 161, 159, 120, 118, 114, 160; 280/11.225,  
280/86.752; 188/315, 316, 298, 274, 281,  
188/286, 297; 293/134; 267/195; 279/2.01,  
279/2.17

See application file for complete search history.

**DESCRIPTION**

FIG. 1 is a perspective view showing the top, front, and right side of a suspension spring having the inventive design;

FIG. 2 is a top view of the suspension spring shown in FIG. 1;

FIG. 3 is a front elevational view of the suspension spring shown in FIG. 1 and the back elevational view is identical to the front elevational view;

FIG. 4 is a right side elevational view of the suspension spring shown in FIG. 1 and the left side elevational view is identical to the right side elevational view; and,

FIG. 5 is a bottom view of the suspension spring shown in FIG. 1.

The broken lines showing on the flanges in FIGS. 1, 2, and 5 is included for the purpose of illustrating environment and forms no part of the claimed design.

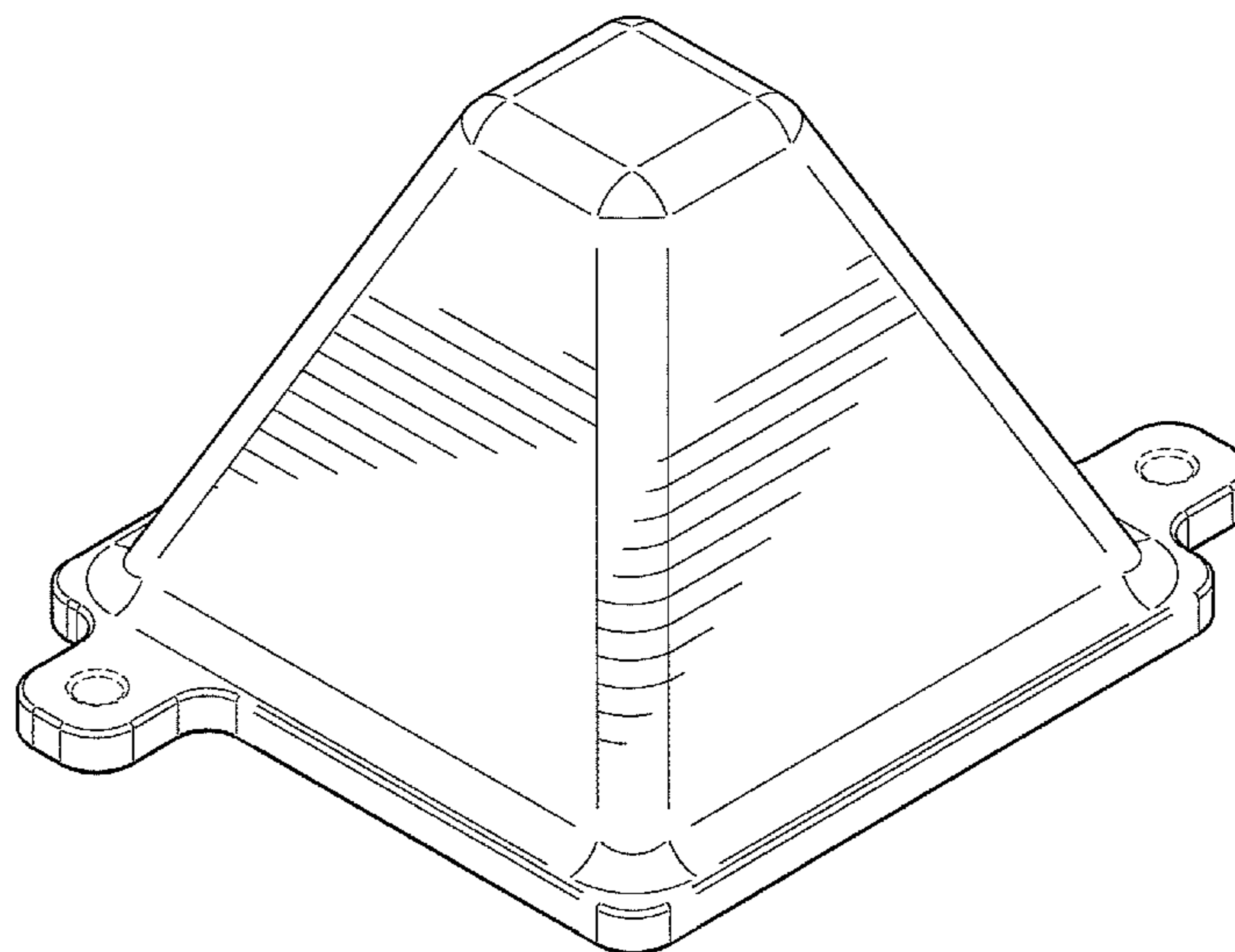
(56) **References Cited**

U.S. PATENT DOCUMENTS

2,788,222	A	4/1957	Wilson et al.
2,980,439	A	4/1961	Miller
3,121,560	A	2/1964	Reed
3,279,820	A	10/1966	Hickman
3,539,170	A	11/1970	Hamel

(Continued)

**1 Claim, 3 Drawing Sheets**



# US D632,619 S

Page 2

## U.S. PATENT DOCUMENTS

3,545,787 A 12/1970 Miller  
 3,580,611 A 5/1971 McNitt  
 3,618,971 A 11/1971 Wragg  
 3,695,737 A 10/1972 Alexander et al.  
 3,797,851 A 3/1974 Hirst  
 3,817,551 A 6/1974 Moore  
 3,955,808 A 5/1976 Jorn et al.  
 3,984,125 A 10/1976 Paton et al.  
 3,997,151 A 12/1976 Leingang  
 4,082,316 A 4/1978 Raidel  
 4,095,690 A \* 6/1978 Baldwin ..... 206/312  
 4,132,433 A 1/1979 Willett  
 4,144,978 A 3/1979 Drake  
 4,162,799 A 7/1979 Willetts  
 4,182,338 A 1/1980 Stanulis  
 4,193,612 A 3/1980 Masser  
 4,213,633 A 7/1980 Moore  
 4,358,096 A 11/1982 Paton et al.  
 4,371,189 A 2/1983 Raidel  
 4,420,171 A 12/1983 Raidel  
 4,452,007 A 6/1984 Martin  
 4,486,029 A 12/1984 Raidel  
 4,504,080 A 3/1985 VanDenberg  
 4,753,456 A 6/1988 Booher  
 4,793,597 A 12/1988 Smith  
 D306,476 S \* 3/1990 Millard ..... D22/123  
 4,944,402 A \* 7/1990 Wu ..... 206/581  
 4,995,636 A 2/1991 Hall et al.  
 5,114,178 A 5/1992 Baxter  
 5,150,918 A 9/1992 Heitzmann  
 5,237,933 A 8/1993 Bucksbee  
 D344,254 S 2/1994 Zimmerman  
 5,327,674 A \* 7/1994 Powell ..... 43/71  
 5,413,320 A 5/1995 Herbst  
 D377,961 S \* 2/1997 Dickson et al. .... D22/122  
 5,676,356 A 10/1997 Ekonen et al.  
 D390,305 S \* 2/1998 Dickson et al. .... D22/122  
 5,753,429 A 5/1998 Pugh  
 5,810,337 A 9/1998 McLaughlin  
 5,868,384 A 2/1999 Anderson  
 5,957,441 A 9/1999 Tews  
 5,989,075 A \* 11/1999 Hsiao et al. .... 439/733.1  
 D423,342 S \* 4/2000 Popesco ..... D9/636  
 6,176,345 B1 \* 1/2001 Perkins et al. .... 181/173  
 6,189,904 B1 2/2001 Gentry et al.  
 6,276,674 B1 8/2001 Randell  
 6,328,294 B1 12/2001 Palinkas  
 6,478,321 B1 11/2002 Heitzmann  
 D471,888 S \* 3/2003 Solland ..... D14/204  
 6,572,087 B2 6/2003 Schleinitz et al.  
 6,585,286 B2 7/2003 Adema et al.  
 6,659,438 B2 12/2003 Michael et al.  
 6,666,474 B2 12/2003 Pavuk  
 6,817,301 B1 11/2004 Bullock  
 6,877,623 B2 4/2005 Salis  
 D519,104 S \* 4/2006 Richter ..... D14/207  
 7,185,903 B2 3/2007 Dove  
 7,229,088 B2 6/2007 Dudding et al.  
 7,234,723 B2 6/2007 Sellers  
 D551,315 S \* 9/2007 Zimmerman ..... D22/119  
 7,303,200 B2 12/2007 Ramsey  
 7,320,538 B2 \* 1/2008 Ko et al. .... 362/606  
 2002/0163165 A1 11/2002 Adema et al.  
 2003/0047907 A1 3/2003 Hicks et al.  
 2004/0262877 A1 12/2004 Sellers  
 2005/0110233 A1 5/2005 Hedenberg  
 2006/0208445 A1 9/2006 Gideon  
 2007/0262547 A1 \* 11/2007 Warinner ..... 280/124.17  
 2008/0018070 A1 \* 1/2008 Gottschalk ..... 280/86.5  
 2008/0030006 A1 2/2008 Sellers  
 2008/0122146 A1 5/2008 Herntier et al.

2008/0134413 A1 \* 6/2008 Guo ..... 2/171.02  
 2008/0258361 A1 10/2008 Wen et al.  
 2008/0290572 A1 \* 11/2008 Desprez et al. .... 267/178  
 2009/0008846 A1 1/2009 Yamakawa et al.  
 2009/0230650 A1 9/2009 Mayen

## FOREIGN PATENT DOCUMENTS

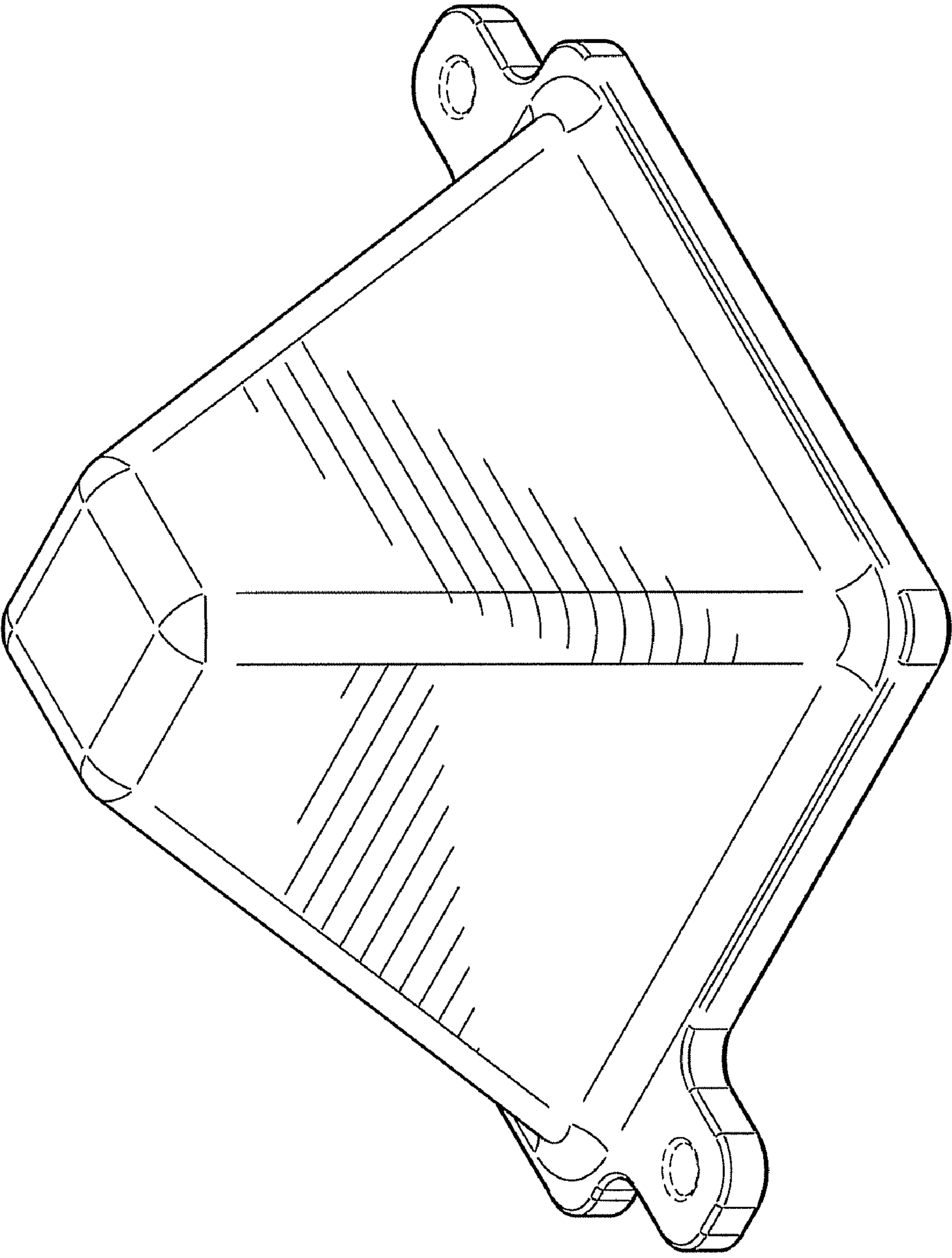
EP 1911661 A1 4/2008  
 EP 2006129 A1 12/2008  
 FR 2550918 3/1985  
 FR 2550918 A1 3/1985  
 FR 2797432 2/2001  
 FR 2797432 A1 2/2001  
 GB 2069424 A 8/1981  
 GB 2128942 A 5/1984  
 GB 2226867 A 7/1990  
 GB 2252276 A 8/1992  
 WO 02/42097 A2 5/2002  
 WO 2006/067551 A1 6/2006

## OTHER PUBLICATIONS

Hendrickson, HN FR Series Suspension 42-58 K Fire/Rescue Feb. 2009.  
 Hendrickson, Haulmaax Heavy-Duty Suspension, Revision F, Jan. 2009.  
 Hendrickson, A Boler Company, Hendrickson Frame Hanger Selection Guide, May 1990.  
 Hendrickson, A Boler Company, Hendrickson RS Series, Single Axle Suspension, Sep. 1995.  
 Hendrickson, RS Series Rubber Load Cushion, Only Hendrickson makes choosing a heavy-duty suspension this easy, Jun. 1993.  
 Hendrickson, A Boler Company, HN Series Technical Sales Publication, Jun. 1997.  
 Hendrickson Suspension, RS Series rubber load cushion, Jul. 1991.  
 Hendrickson Mfg., Tandem Division, Wide spread equalizing beams, sales bulletin, May 1981.  
 Hendrickson Mfg. Co., Tandem Division, Hendrickson Tandem Suspensions for GMC Trucks, Aug. 1979.  
 Hendrickson, The Boler Company, RS Frame Hanger, Dec. 1997.  
 Hendrickson, A Boler Company, RS Series Rubber Load Cushion Suspensions, Mar. 1996.  
 Hendrickson, A Boler Company, RS Series Rubber Load Cushion Suspensions, Jul. 1996.  
 Hendrickson, A Boler Company, RS Series Rubber Load Cushion, Mar. 1998.  
 Hendrickson Suspension, HN Series Premium Rubber, Hendrickson introduces a completely new concept in Walking Beam Suspension, Jun. 1993.  
 Hendrickson Suspension, A Boler Company, Hendrickson HNT Series, Feb. 1992.  
 Hendrickson Suspension, Sales Engineering Update, Mar. 1993.  
 Hendrickson Truck Suspension Systems, A Boler Company, RS Series Rubber Load Cushion, Dec. 1996.  
 Hendrickson Truck Suspension Systems, A Boler Company, RS Series Rubber Load Cushion, Apr. 1998.  
 Hendrickson Truck Suspension Systems, A Boler Company, HN Series VariRate Spring System, May 1997.  
 Hendrickson Truck Suspension Systems, A Boler Company, HN Series VariRate Spring System, Nov. 1997.  
 Hendrickson Truck Suspension Systems, A Boler Company, HN Series VariRate Spring System, Sep. 1998.  
 Hendrickson Truck Suspension Systems, A Boler Company, HN Series VariRate Spring System, Jul. 1999.  
 Hendrickson, HN Series VariRate Spring System, Nov. 2000.  
 Hendrickson, HN Series VariRate Spring System, Nov. 2005.  
 Hendrickson Truck Suspension Systems, A Boler Company, HN 402, Feb. 1996.  
 Hendrickson Truck Suspension Systems, A Boler Company, R Series Solid Mount, Jul. 1999.  
 Hendrickson Truck Suspension Systems, A Boler Company, RS Series Rubber Load Cushion, Jun. 1999.  
 Hendrickson, Haulmaax Heavy Duty Suspension, Oct. 2001.

- Hendrickson, Haulmaax Heavy Duty Suspension, Dec. 2003.
- Hendrickson, Haulmaax Heavy Duty Suspension, Mar. 2005.
- Hendrickson, Haulmaax Heavy Duty Suspension, Jan. 2007.
- Hendrickson, Haulmaax Heavy Duty Suspension, Mar. 2008.
- Hendrickson, Assembly Instructions Haulmaax, Subject: Kit Nos. 64178-003 & 004, Feb. 2003.
- Hendrickson, Assembly Instructions Haulmaax, Subject: Tie-bar Bolster Spring Kit Nos. 64179-037, Jun. 2006.
- Hendrickson, Assembly Instructions Haulmaax, Subject: Outboard Frame Bracket for Paccar Vehicles Built after May 1, 2005 through Aug. 31, 2006, Oct. 2006.
- Hendrickson, Assembly Instructions Haulmaax Saddle Assembly, Subject: Service Kit No. 57974-048, Dec. 2008.
- Hendrickson, Technical Bulletin HN 402/462/522, Subject: Auxiliary Spring Shim Design, Oct. 2000.
- Hendrickson, Technical Bulletin HN 402/462/522, Subject: Auxiliary Spring Shim Design, Dec. 2000.
- Hendrickson, Technical Bulletin HN 402/462/522, Subject: Auxiliary Spring Shim Design, Jun. 2006.
- Hendrickson, Technical Bulletin Haulmaax Series, Subject: Mandatory Shock Applications, Nov. 2004.
- Hendrickson, Technical Bulletin R, RS, RT/RTE 46K Capacity, Subject: 46K Heavy-Duty Beam Option, Dec. 2004.
- Hendrickson, Technical Bulletin Haulmaax, Subject: 54" Equalizing Beam Assembly, Oct. 2005.
- Hendrickson, Technical Bulletin Haulmaax 460, Subject: Bolster Spring Assembly with Tie-bar, Jun. 2006.
- Hendrickson Truck Suspension Systems, A Boler Company, Sales engineering update, Subject: HN-402/462 Auxiliary Spring Assembly, Aug. 1998.
- Hendrickson Truck Suspension Systems, A Boler Company, Sales engineering update, Subject: Model Designation and Discontinuance, Aug. 1999.
- Hendrickson Truck Suspension Systems, A Boler Company, Sales engineering update, Subject: Equalizer Beam, Aug. 1999.
- Hendrickson, Parts List RS Series, Nov. 2004.
- Hendrickson, Parts List Haulmaax, May 2002.
- Hendrickson, Parts List Haulmaax, Jul. 2003.
- Hendrickson, Parts List Haulmaax, Jul. 2006.
- Hendrickson, Parts List Haulmaax, Dec. 2007.
- Hendrickson, Parts List RS 400/460/480/520 Jan. 1998.
- Hendrickson, Parts List HN 402/462, Sep. 1997.
- Hendrickson, Parts List HN Series, Dec. 2004.
- Hendrickson Truck Suspension Systems, A Boler Company, Technical Publication RS-340 thru 520, Subject: Springing: Frame Hangers, Load Cushions and Saddle Assembly, Jul. 1993.
- Hendrickson Truck Suspension Systems, A Boler Company, Technical Publication HN Series Truck & Trailer Suspension No: 17730-198, Mar. 1993.
- Hendrickson, Technical Procedure HN/HNT-400/460 Truck & Trailer Suspension in Production Nov. 1988-Sep. 1996, Apr. 1998.
- Hendrickson Truck Suspension Systems, A Boler Company, Technical Publication HN 402 Series, Subject: Service Instructions, Aug. 1996.
- Hendrickson Truck Suspension Systems, A Boler Company, Technical Publication HN 402/462 Series, Subject: Service Instructions, Aug. 1998.
- Hendrickson, Technical Procedure Haulmaax, Subject: Service Instructions, May 2002.
- Hendrickson, Technical Procedure Haulmaax, Subject: Service Instructions, Jun. 2007.
- Hendrickson, Technical Procedure Haulmaax, Subject: Pre-delivery Inspection and Preventive Maintenance, Apr. 2006.
- Hendrickson, Technical Procedure Haulmaax, Subject: Service Instructions, Dec. 2007.
- Hendrickson, Technical Procedure R/RS/RT Heavy Duty, Subject: 650K/850K/1000K Pound Capacity Beam End Connection Tightening Torque Procedure, Jul. 2006.
- Hendrickson, RS Series Rubber Load Cushion, Feb. 2000.
- MOR/ryde, the Mor/ryde Steer and Drive Axle Suspension Systems, Mar. 7, 2008.
- MOR/ryde, Company Profile, downloaded from the World Wide Web at <http://www.morrydede.com/php/about/profile/php> on Feb. 28, 2008.
- MOR/ryde, T/A Modular Rubber Suspension System, Service Manual, Mar. 5, 2003.
- MOR/ryde, Tandem Axle Rubber Suspension Sytem, Service Manual, Suspension Codes: T01-01 and L01-01, Mar. 5, 2003.
- MOR/ryde, RL Rubber Leaf Suspension System, Owner's Manual, Mar. 12, 2003.
- MOR/ryde, Commercial Trailer Suspension, Jun. 1973.
- MOR/ryde, School Bus Suspension, Aug. 1973.
- MOR/ryde, a rubber spring . . . heart of the Mor/ryde system, Aug. 1973.
- Jorn, Technology in Rubber—Metal, Sep. 29, 2008.
- Hendrickson, Parts List RS Series, Apr. 2008.
- Hendrickson, Technical Procedure, R/RS Heavy Duty, Subject: 85K/100K/120K lbs Capacity Tightening Torgue for Torque Rod and Saddle Assembly Fasteners, Oct. 2008.
- Hendrickson USA, L.L.C., Technical Procedure R/RS/RT Heavy Duty, Lit. No. 17730-149, Revision C, Jul. 2006.
- U.S. Appl. No. 12/045,069, entitled "Elastomeric Spring Vehicle Suspension" and filed Mar. 10, 2008.
- U.S. Appl. No. 12/334,195, entitled "Modular Suspension System and Components Thereof" and filed Dec. 12, 2008.
- U.S. Appl. No. 29/329,359, entitled "Suspension Spring" and filed Dec. 12, 2008.
- U.S. Appl. No. 29/344,283, entitled "Suspension Spring" and filed Sep. 25, 2009.
- U.S. Appl. No. 29/344,284, entitled "Suspension Spring" and filed Sep. 25, 2009.
- U.S. Appl. No. 12/545,828, entitled "Tie-plate and frame hanger of a suspension assembly" and filed Aug. 22, 2009.
- U.S. Appl. No. 29/339,134, entitled "Suspension Assembly" and filed Jun. 24, 2009.
- U.S. Appl. No. 29/337,974, entitled "Progressive Rate Spring for a Suspension" and filed Jun. 2, 2009.
- U.S. Appl. No. 29/329,354, entitled "Suspension Assembly" and filed Dec. 12, 2008.
- U.S. Appl. No. 29/315,182, entitled "Suspension Assembly" and filed Jun. 2, 2009.
- European Patent Office, International Search Report for International Application No. PCT/US2009/036662, Feb. 17, 2010.
- European Patent Office, Written Opinion of the International Searching Authority for International Application No. PCT/US2009/036662, Feb. 17, 2010.
- European Patent Office, International Search Report the International Searching Authority for International Application No. PCT/US2009/056575, Feb. 12, 2010.
- European Patent Office, Written Opinion of the International Searching Authority for International Application No. PCT/US2009/056575, Feb. 12, 2010.

\* cited by examiner



**FIG. 1**

FIG. 3

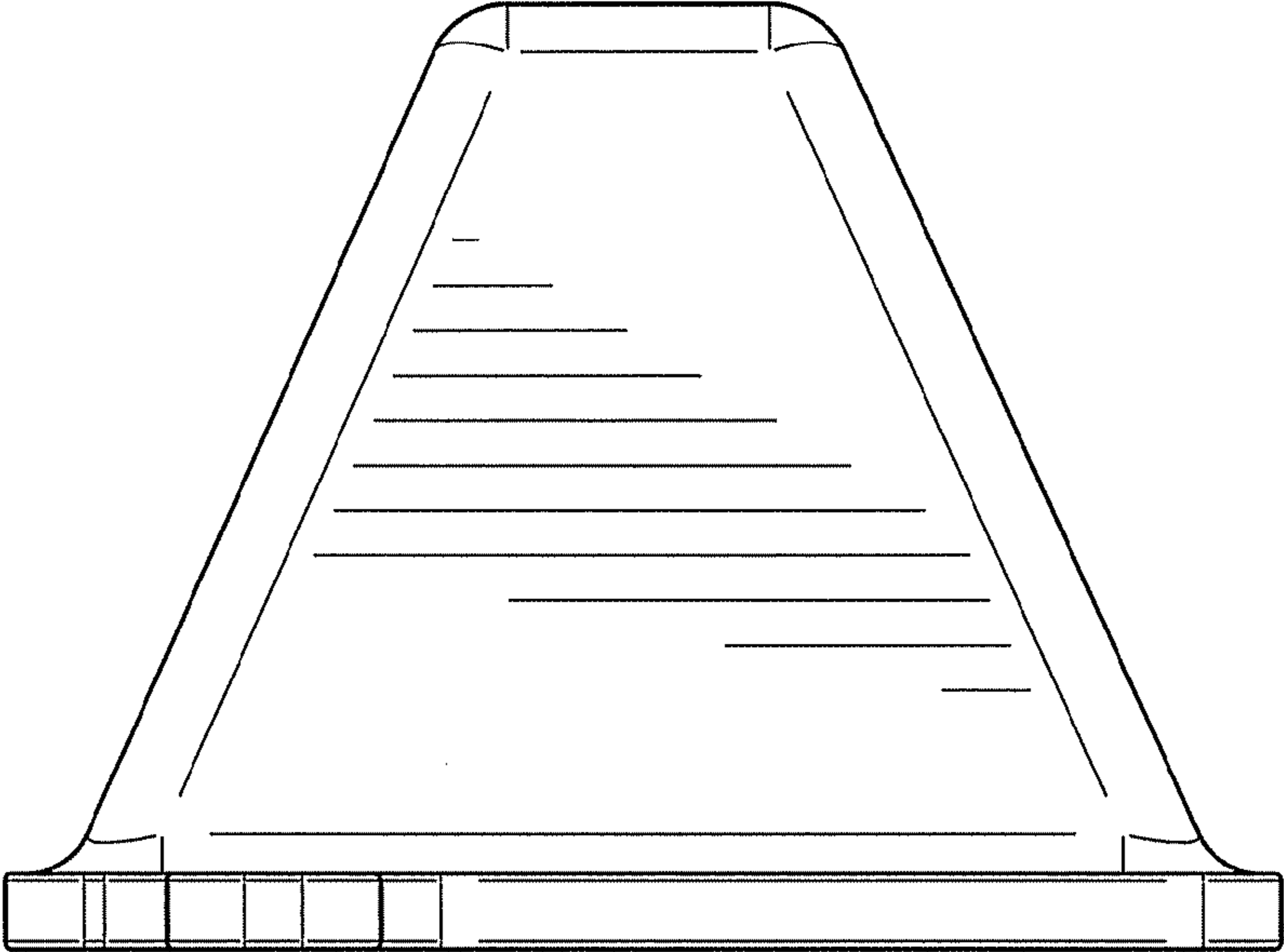


FIG. 2

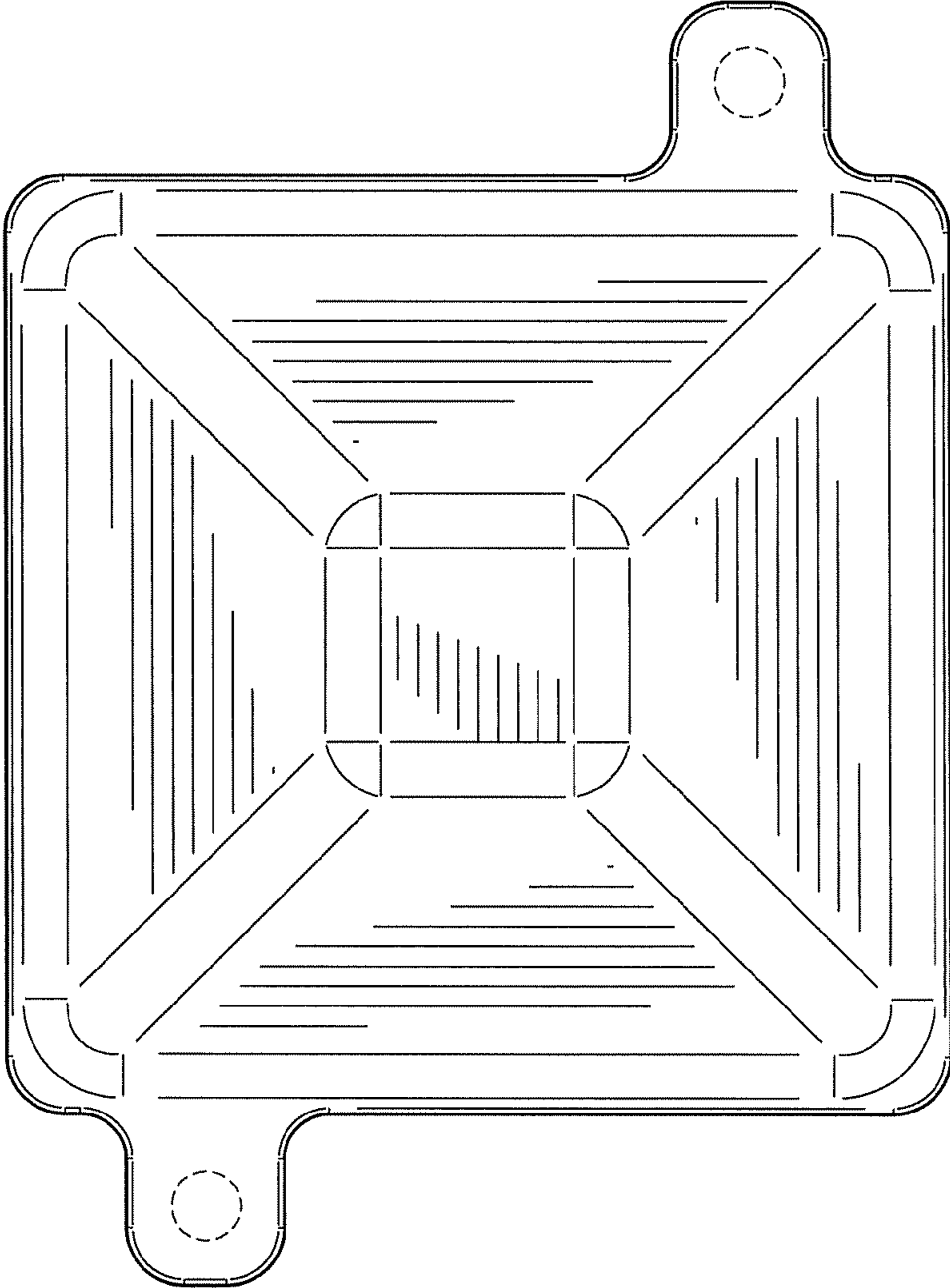


FIG. 5

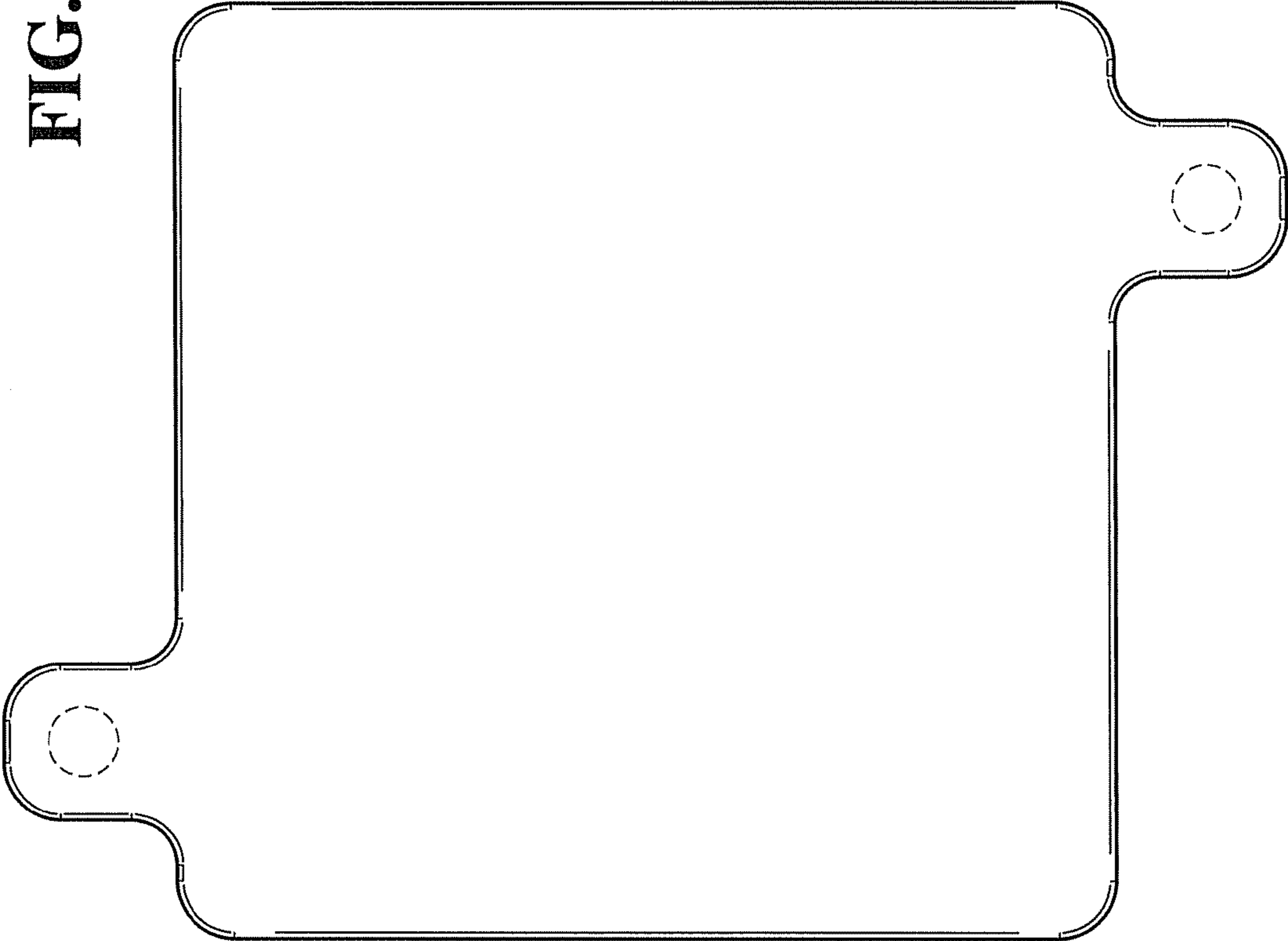


FIG. 4

