



US00D632620S

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

(10) **Patent No.:** **US D632,620 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, A Boler Company, Hendrickson Frame Hanger Selection Guide, May 1990.

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

(Continued)

(21) Appl. No.: **29/344,284**

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**

DESCRIPTION

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

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

(58) **Field of Classification Search** D12/400,

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

D12/340, 161, 159, 120, 118, 114; 280/11.225,

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;

280/86.752; 188/315, 316, 298, 274, 281,

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,

188/286, 297; 293/134; 267/195; 279/2.01,

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

279/2.17

See application file for complete search history.

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.

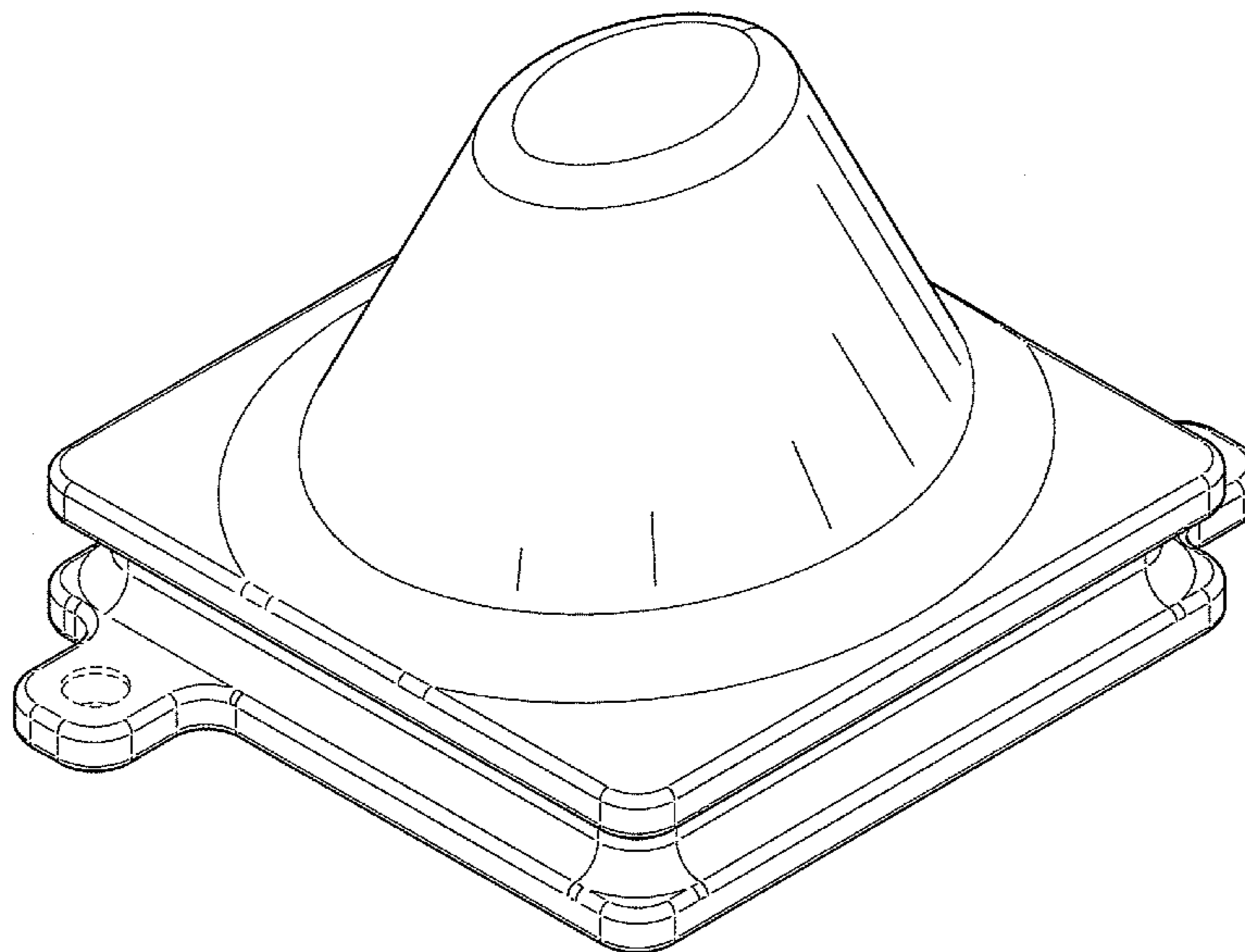
(56) **References Cited**

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 D632,620 S

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	446/45
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	435/4
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 et al.	

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, 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 Discontinuation, 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://wwwv.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. 29/344,282, 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.
- Hendrickson, Kenworth Truck Company, Haulmaax Suspensions, Mar. 9, 2009.
- Hendrickson, HN FR Series Suspension 42-58 K Fire/Rescue Feb. 2009.
- Hendrickson, Haulmaax Heavy-Duty Suspension, Revision F, Jan. 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 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

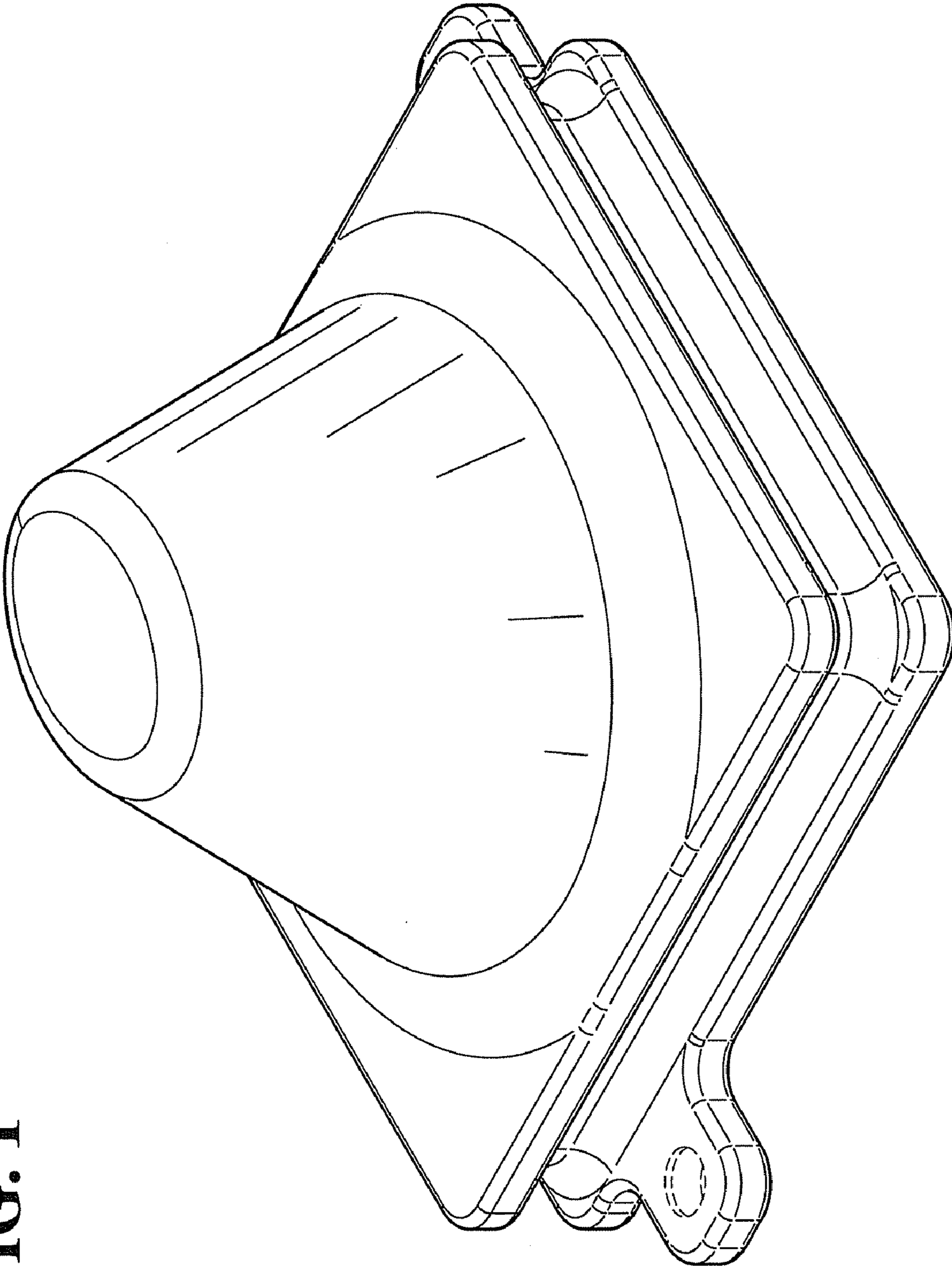


FIG. 1

FIG. 3

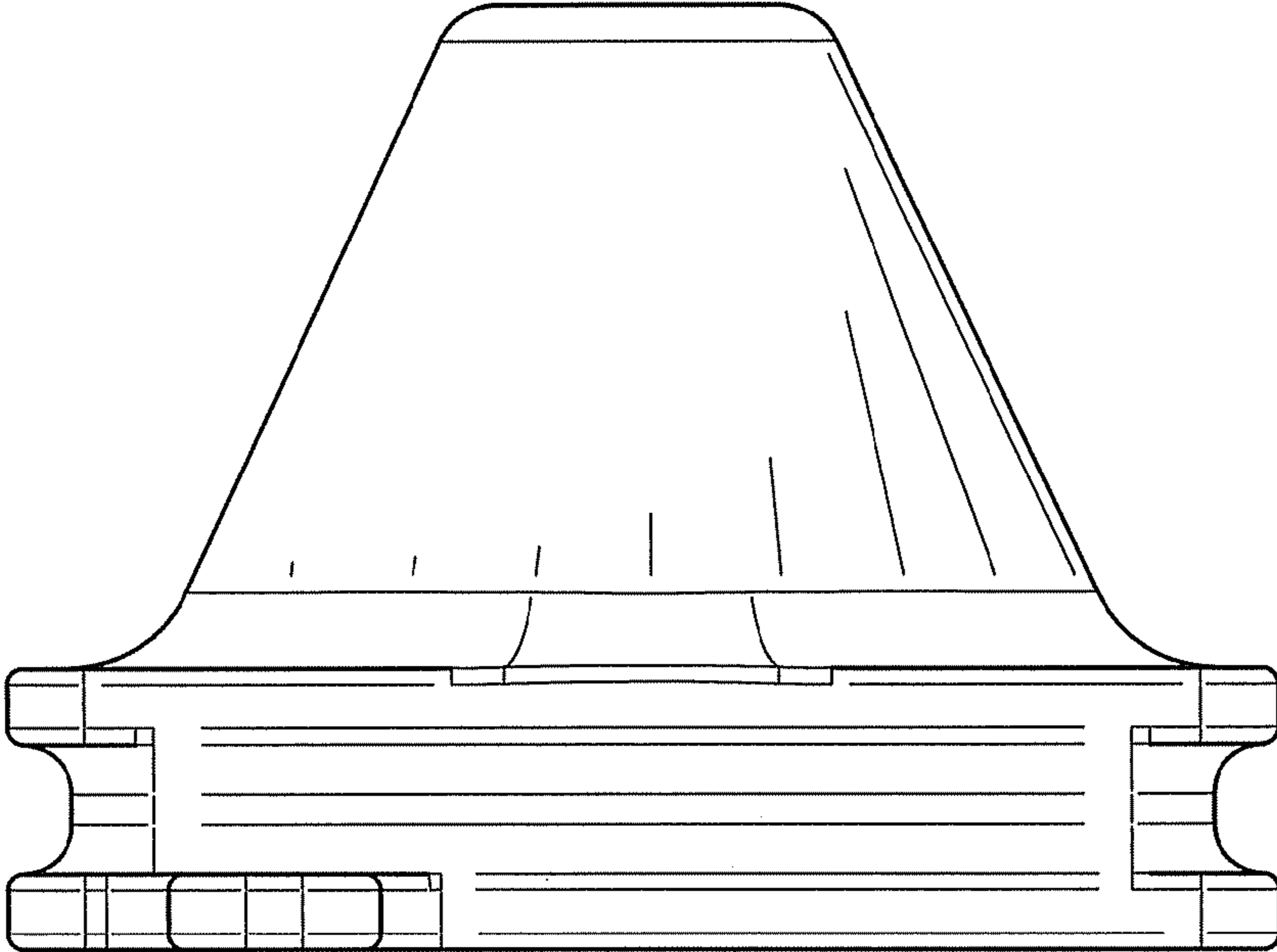


FIG. 2

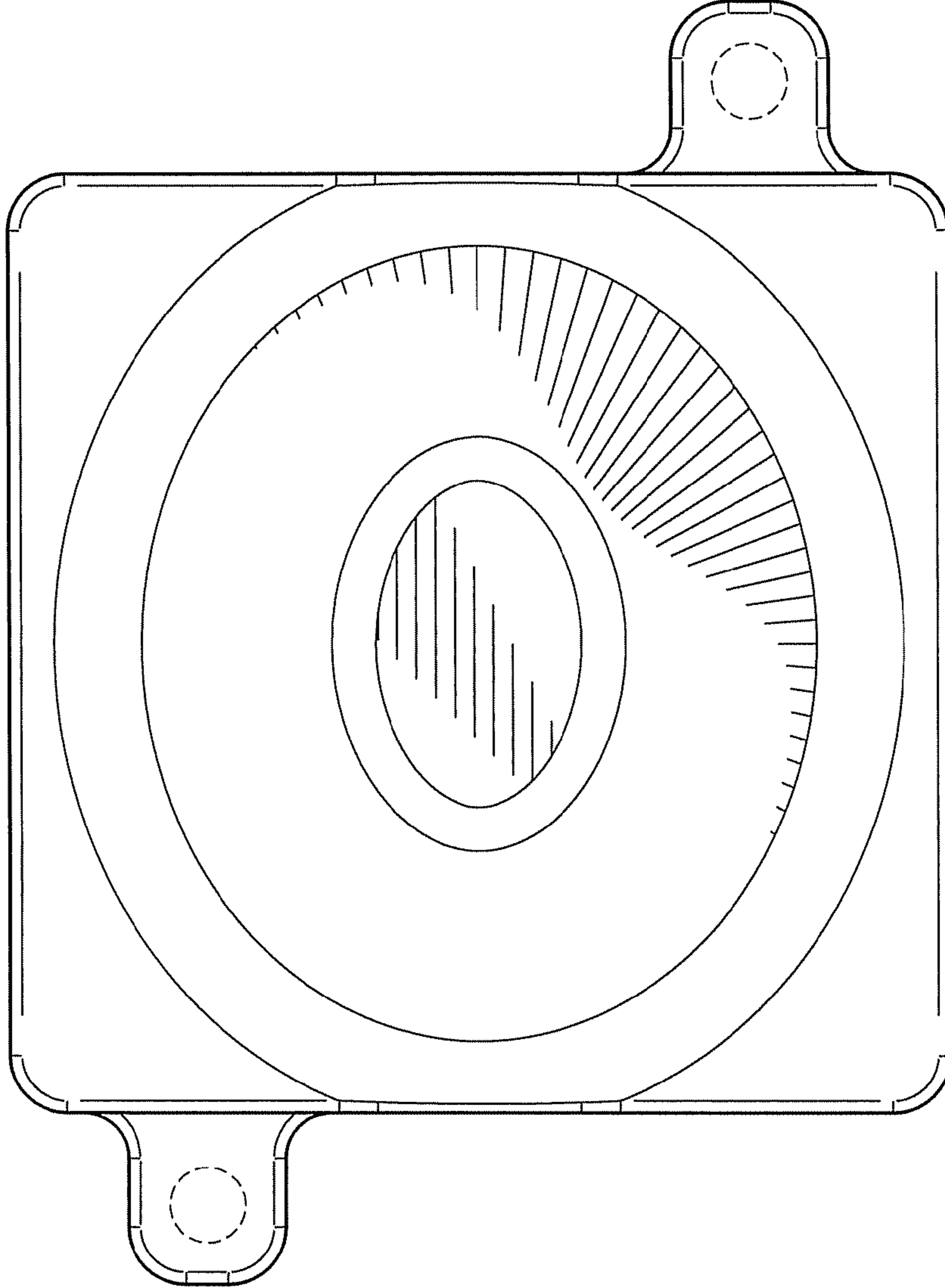


FIG. 5

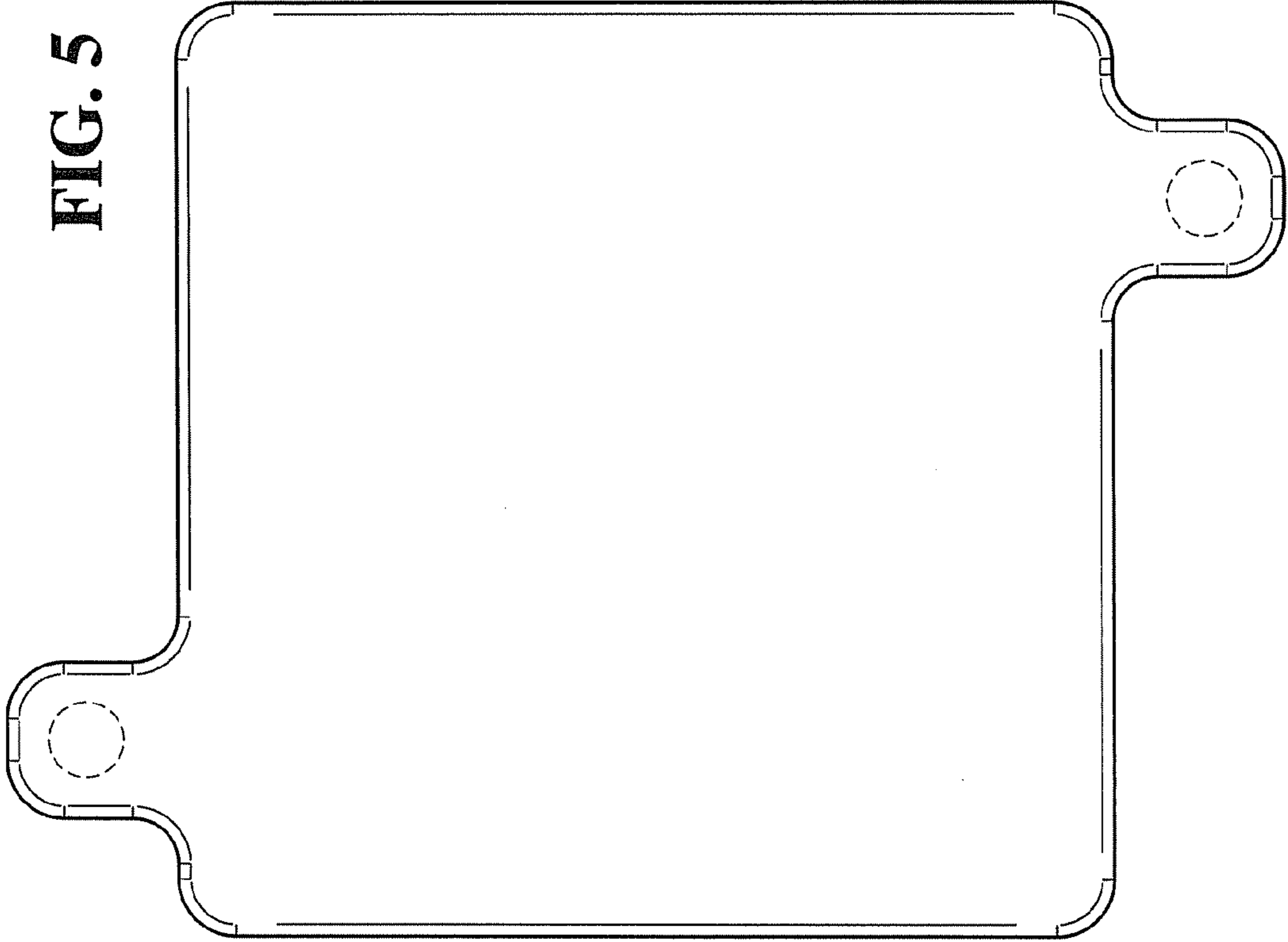


FIG. 4

