



US008113875B2

(12) **United States Patent**  
**Malloy et al.**

(10) **Patent No.:** **US 8,113,875 B2**  
(45) **Date of Patent:** **\*Feb. 14, 2012**

(54) **CABLE CONNECTOR**

(75) Inventors: **Allen L. Malloy**, Elmira Heights, NY (US); **Charles Thomas**, Athens, PA (US); **Mike Dean**, Waverly, NY (US); **Bruce Hauver, Sr.**, Elmira, NY (US)

(73) Assignee: **Belden Inc.**, St. Louis, MO (US)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 134 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **12/568,149**

(22) Filed: **Sep. 28, 2009**

(65) **Prior Publication Data**

US 2011/0117774 A1 May 19, 2011

**Related U.S. Application Data**

(60) Provisional application No. 61/101,185, filed on Sep. 30, 2008, provisional application No. 61/101,191, filed on Sep. 30, 2008, provisional application No. 61/155,246, filed on Feb. 25, 2009, provisional application No. 61/155,249, filed on Feb. 25, 2009, provisional application No. 61/155,250, filed on Feb. 25, 2009, provisional application No. 61/155,252, filed on Feb. 25, 2009, provisional application No. 61/155,289, filed on Feb. 25, 2009, provisional application No. 61/155,297, filed on Feb. 25, 2009, provisional application No. 61/175,613, filed on May 5, 2009, provisional application No. 61/242,884, filed on Sep. 16, 2009.

(51) **Int. Cl.**  
**H01R 9/05** (2006.01)

(52) **U.S. Cl.** ..... **439/578**

(58) **Field of Classification Search** ..... 439/578,  
439/63, 584  
See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

1,734,506 A 11/1929 Walter  
2,258,737 A 10/1941 Browne  
2,394,351 A 2/1946 Wurzburger  
2,460,304 A 2/1949 McGee et al.  
2,544,654 A 3/1951 Brown  
2,544,764 A 3/1951 Parkes

(Continued)

**FOREIGN PATENT DOCUMENTS**

CA 2096710 11/1994

(Continued)

**OTHER PUBLICATIONS**

Notice of Allowance for U.S. Appl. No. 12/568,160, mail date Apr. 18, 2011, 8 pages.

(Continued)

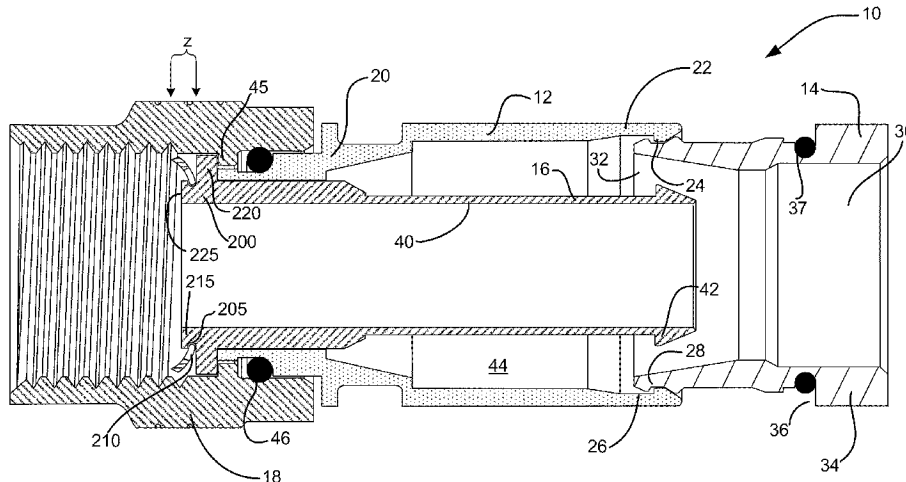
*Primary Examiner* — Jean F Duverne

(74) *Attorney, Agent, or Firm* — Foley & Lardner LLP

(57) **ABSTRACT**

A coaxial cable connector for coupling a coaxial cable to a mating connector includes a connector body having a forward end and a rearward cable receiving end for receiving a cable. A nut is rotatably coupled to the forward end of the connector body. An annular post is disposed within the connector body, the annular post having a forward flanged base portion located adjacent a rearward portion of the nut. An annular notch is formed in the forward flanged base portion. A biasing element is retained in the annular notch, and the biasing element extends towards a forward end of the nut in an uncompressed state.

**24 Claims, 8 Drawing Sheets**



U.S. PATENT DOCUMENTS						
2,549,647	A	4/1951	Turenne	3,972,013	A 7/1976	Shapiro
2,694,187	A	11/1954	Nash	3,976,352	A 8/1976	Spinner
2,728,895	A	12/1955	Quackenbush et al.	3,980,805	A 9/1976	Lipari
2,754,487	A	7/1956	Carr et al.	3,985,418	A 10/1976	Spinner
2,757,351	A	7/1956	Klostermann	4,012,105	A 3/1977	Biddle
2,761,110	A	8/1956	Edlen et al.	4,017,139	A 4/1977	Nelson
2,762,025	A	9/1956	Melcher	4,046,451	A 9/1977	Juds et al.
2,805,399	A	9/1957	Leeper	4,051,447	A 9/1977	Heckman, Jr. et al.
2,870,420	A	1/1959	Malek	4,053,200	A 10/1977	Pugner
2,983,893	A	5/1961	Jackson	4,059,330	A 11/1977	Shirey
2,999,701	A	9/1961	Blair et al.	4,093,335	A 6/1978	Schwartz et al.
3,040,288	A	6/1962	Edlen et al.	4,126,372	A 11/1978	Hashimoto et al.
3,184,706	A	5/1965	Atkins	4,131,332	A 12/1978	Hogendobler et al.
3,196,382	A	7/1965	Morello, Jr.	4,150,250	A 4/1979	Lundeberg
3,206,540	A	9/1965	Cohen	4,156,554	A 5/1979	Aujla
3,245,027	A	4/1966	Ziegler, Jr.	4,165,911	A 8/1979	Laudig
3,275,913	A	9/1966	Blanchard et al.	4,168,921	A 9/1979	Blanchard
3,275,970	A	9/1966	Johanson et al.	4,172,385	A 10/1979	Cristensen
3,292,136	A	12/1966	Somerset	4,173,385	A 11/1979	Fenn et al.
3,295,076	A	12/1966	Kraus	4,187,481	A 2/1980	Boutros
3,297,979	A	1/1967	O'Keefe et al.	4,191,408	A 3/1980	Acker
3,320,575	A	5/1967	Brown et al.	4,225,162	A 9/1980	Dola
3,336,562	A	8/1967	McCormick et al.	4,227,765	A 10/1980	Neumann et al.
3,350,677	A	10/1967	Daum	4,235,461	A 11/1980	Normack
3,355,698	A	11/1967	Keller	4,250,348	A 2/1981	Kitagawa
3,373,243	A	3/1968	Janowiak et al.	4,255,011	A 3/1981	Davis et al.
3,384,703	A	5/1968	Forney, Jr. et al.	4,258,943	A 3/1981	Vogt et al.
3,406,373	A	10/1968	Forney, Jr. et al.	4,280,749	A 7/1981	Hemmer
3,448,430	A	6/1969	Kelly	4,339,166	A 7/1982	Dayton
3,465,281	A	9/1969	Florer	4,346,958	A 8/1982	Blanchard
3,467,940	A	9/1969	Wallo	4,354,721	A 10/1982	Luzzi
3,475,545	A	10/1969	Stark et al.	4,358,174	A 11/1982	Dreyer
3,498,647	A	3/1970	Schroder	4,373,767	A 2/1983	Cairns
3,526,871	A	9/1970	Hobart	4,400,050	A 8/1983	Hayward
3,533,051	A	10/1970	Ziegler, Jr.	4,406,483	A 9/1983	Perlman
3,537,065	A	10/1970	Winston	4,407,529	A 10/1983	Holman
3,538,464	A	11/1970	Walsh	4,408,821	A 10/1983	Forney, Jr.
3,544,705	A	12/1970	Winston	4,408,822	A 10/1983	Nikitas
3,551,882	A	12/1970	O'Keefe	4,421,377	A 12/1983	Spinner
3,564,487	A	2/1971	Upstone et al.	4,426,127	A 1/1984	Kubota
3,573,677	A	4/1971	Detar	4,444,453	A 4/1984	Kirby et al.
3,579,155	A	5/1971	Tuchto	4,456,323	A 6/1984	Pitcher et al.
3,591,208	A	7/1971	Nicolaus	4,462,653	A 7/1984	Flederbach et al.
3,594,694	A	7/1971	Clark	4,464,000	A 8/1984	Werth et al.
3,613,050	A	10/1971	Andrews	4,484,792	A 11/1984	Tengler et al.
3,629,792	A	12/1971	Dorrell	4,515,427	A 5/1985	Smit
3,633,150	A	1/1972	Swartz	4,533,191	A 8/1985	Blackwood
3,633,944	A	1/1972	Hamburg	4,540,231	A 9/1985	Forney, Jr.
3,644,874	A	2/1972	Hutter	4,545,633	A 10/1985	McGeary
3,646,502	A	2/1972	Hutter et al.	4,545,637	A 10/1985	Bosshard et al.
3,663,926	A	5/1972	Brandt	4,557,546	A 12/1985	Dreyer
3,668,612	A	6/1972	Nepovim	4,561,716	A 12/1985	Acke
3,669,472	A	6/1972	Nadsady	4,575,274	A 3/1986	Hayward
3,671,922	A	6/1972	Zerlin et al.	4,583,811	A 4/1986	McMills
3,684,321	A	8/1972	Hundhausen et al.	4,588,246	A 5/1986	Schildkraut et al.
3,686,623	A	8/1972	Nijman	4,593,964	A 6/1986	Forney, Jr. et al.
3,694,792	A	9/1972	Wallo	4,596,434	A 6/1986	Saba et al.
3,710,005	A	1/1973	French	4,596,435	A 6/1986	Bickford
3,721,869	A	3/1973	Paoli	4,597,620	A 7/1986	Lindner et al.
3,743,979	A	7/1973	Schor	4,598,961	A 7/1986	Cohen
3,745,514	A	7/1973	Brishka	4,600,263	A 7/1986	DeChamp et al.
3,778,535	A	12/1973	Forney, Jr.	4,613,119	A 9/1986	Hardtke
3,781,762	A	12/1973	Quackenbush	4,614,390	A 9/1986	Baker
3,808,580	A	4/1974	Johnson	4,632,487	A 12/1986	Wargula
3,836,700	A	9/1974	Niemeyer	4,640,572	A 2/1987	Conlon
3,845,453	A	10/1974	Hemmer	4,645,281	A 2/1987	Burger
3,846,738	A	11/1974	Nepovim	4,650,228	A 3/1987	McMills et al.
3,854,003	A	12/1974	Duret	4,655,159	A 4/1987	McMills
3,870,978	A	3/1975	Dreyer	4,660,921	A 4/1987	Hauer
3,879,102	A	4/1975	Horak	4,668,043	A 5/1987	Saba et al.
3,907,399	A	9/1975	Spinner	4,674,818	A 6/1987	McMills et al.
3,910,673	A	10/1975	Stokes	4,676,577	A 6/1987	Szegda
3,915,539	A	10/1975	Collins	4,682,832	A 7/1987	Punako et al.
3,936,132	A	2/1976	Hutter	4,688,876	A 8/1987	Morelli
3,953,097	A	4/1976	Graham	4,688,878	A 8/1987	Cohen et al.
3,953,098	A	4/1976	Avery et al.	4,691,976	A 9/1987	Cowen
				4,703,987	A 11/1987	Gallusser et al.

US 8,113,875 B2

4,738,009	A	4/1988	Down et al.	5,444,810	A	8/1995	Szegda
4,746,305	A	5/1988	Nomura	5,455,548	A	10/1995	Grandchamp et al.
4,747,786	A	5/1988	Hayashi et al.	5,456,611	A	10/1995	Henry et al.
4,755,152	A	7/1988	Elliot et al.	5,456,614	A	10/1995	Szegda
4,759,729	A	7/1988	Kemppainen et al.	5,466,173	A	11/1995	Down
4,761,146	A	8/1988	Sohoel	5,470,257	A	11/1995	Szegda
4,772,222	A	9/1988	Laudig et al.	5,490,033	A	2/1996	Cronin
4,777,669	A	10/1988	Rogus	5,494,454	A	2/1996	Johnsen
4,789,355	A	12/1988	Lee	5,496,076	A	3/1996	Lin
4,793,821	A	12/1988	Fowler et al.	5,501,616	A	3/1996	Holliday
4,806,116	A	2/1989	Ackerman	5,525,076	A	6/1996	Down
4,808,128	A	2/1989	Werth	5,542,861	A	8/1996	Anhalt et al.
4,813,886	A	3/1989	Roos et al.	5,548,088	A	8/1996	Gray et al.
4,820,185	A	4/1989	Moulin	5,550,521	A	8/1996	Bernaude et al.
4,824,400	A	4/1989	Spinner	5,571,028	A	11/1996	Szegda
4,834,675	A	5/1989	Samchisen	5,586,910	A	12/1996	Del Negro et al.
4,854,893	A	8/1989	Morris	5,595,502	A	1/1997	Allison
4,857,014	A	8/1989	Alf et al.	5,598,132	A	1/1997	Stabile
4,869,679	A	9/1989	Szegda	5,607,325	A	3/1997	Toma
4,874,331	A	10/1989	Iverson	5,620,339	A	4/1997	Gray et al.
4,878,697	A	11/1989	Henry	5,632,651	A	5/1997	Szegda
4,892,275	A	1/1990	Szegda	5,651,699	A	7/1997	Holliday
4,902,246	A	2/1990	Samchisen	5,653,605	A	8/1997	Woehl et al.
4,906,207	A	3/1990	Banning et al.	5,667,405	A	9/1997	Holliday
4,915,651	A	4/1990	Bout	5,683,263	A	11/1997	Hsu
4,923,412	A	5/1990	Morris	5,690,503	A	11/1997	Konda et al.
4,925,403	A	5/1990	Zorey	5,695,365	A	12/1997	Kennedy et al.
4,927,385	A	5/1990	Cheng	5,702,262	A	12/1997	Brown et al.
4,929,188	A	5/1990	Lionetto et al.	5,702,263	A	12/1997	Baumann et al.
4,941,846	A	7/1990	Guimond et al.	5,769,652	A	6/1998	Wider
4,952,174	A	8/1990	Sucht et al.	5,775,927	A	7/1998	Wider
4,957,456	A	9/1990	Olson et al.	5,879,191	A	3/1999	Burris
4,973,265	A	11/1990	Heeren	5,882,226	A	3/1999	Bell et al.
4,979,911	A	12/1990	Spencer	5,956,365	A	9/1999	Haissig
4,990,104	A	2/1991	Schieferly	5,967,852	A	10/1999	Follingstad et al.
4,990,105	A	2/1991	Karlovič	5,975,949	A	11/1999	Holliday et al.
4,990,106	A	2/1991	Szegda	5,975,951	A	11/1999	Burris et al.
4,992,061	A	2/1991	Brush, Jr. et al.	5,997,350	A	12/1999	Burris et al.
5,002,503	A	3/1991	Campbell et al.	6,019,636	A	2/2000	Langham
5,007,861	A	4/1991	Stirling	6,032,358	A	3/2000	Wild
5,021,010	A	6/1991	Wright	6,042,422	A	3/2000	Youtsey
5,024,606	A	6/1991	Ming-Hwa	6,089,903	A	7/2000	Stafford Gray et al.
5,037,328	A	8/1991	Karlovič	6,089,912	A	7/2000	Tallis et al.
5,062,804	A	11/1991	Jamet et al.	6,089,913	A	7/2000	Holliday
5,066,248	A	11/1991	Gaver, Jr. et al.	6,106,314	A	8/2000	McLean et al.
5,073,129	A	12/1991	Szegda	6,123,581	A	9/2000	Stabile et al.
5,083,943	A	1/1992	Tarrant	6,146,197	A	11/2000	Holliday et al.
5,100,341	A	3/1992	Czyz et al.	6,153,830	A	11/2000	Montena
5,120,260	A	6/1992	Jackson	6,168,211	B1	1/2001	Schorn-Gilson
5,127,853	A	7/1992	McMills et al.	6,210,222	B1	4/2001	Langham et al.
5,131,862	A	7/1992	Gershfeld	6,217,383	B1	4/2001	Holland et al.
5,141,451	A	8/1992	Down	RE37,153	E	5/2001	Henszey et al.
5,154,636	A	10/1992	Vaccaro et al.	6,241,553	B1	6/2001	Hsia
5,161,993	A	11/1992	Leibfried, Jr.	6,261,126	B1	7/2001	Stirling
5,192,219	A	3/1993	Fowler et al.	6,344,736	B1	2/2002	Kerrigan et al.
5,195,906	A	3/1993	Szegda	6,358,077	B1	3/2002	Young
5,205,761	A	4/1993	Nilsson	6,390,825	B1	5/2002	Handley et al.
5,207,602	A	5/1993	McMills et al.	D458,904	S	6/2002	Montena
5,217,391	A	6/1993	Fisher, Jr.	D460,739	S	7/2002	Fox
5,217,393	A	6/1993	Del Negro et al.	D460,740	S	7/2002	Montena
5,269,701	A	12/1993	Leibfried, Jr.	D460,946	S	7/2002	Montena
5,280,254	A	1/1994	Hunter et al.	D460,947	S	7/2002	Montena
5,281,167	A	1/1994	Le et al.	D460,948	S	7/2002	Montena
5,283,853	A	2/1994	Szegda	D461,166	S	8/2002	Montena
5,284,449	A	2/1994	Vaccaro	D461,167	S	8/2002	Montena
5,316,494	A	5/1994	Flanagan et al.	D461,778	S	8/2002	Fox
5,316,499	A	5/1994	Scannelli et al.	D462,058	S	8/2002	Montena
5,318,459	A	6/1994	Shields	D462,060	S	8/2002	Fox
5,338,225	A	8/1994	Jacobsen et al.	D462,327	S	9/2002	Montena
5,342,218	A	8/1994	McMills et al.	6,478,618	B2	11/2002	Wong
5,354,217	A	10/1994	Gabel et al.	6,491,546	B1	12/2002	Perry
5,371,819	A	12/1994	Szegda	D468,696	S	1/2003	Montena
5,371,821	A	12/1994	Szegda	6,558,194	B2	5/2003	Montena
5,371,827	A	12/1994	Szegda	6,561,841	B2	5/2003	Norwood et al.
5,393,244	A	2/1995	Szegda	6,619,876	B2	9/2003	Vaitkus et al.
5,409,398	A	4/1995	Chadbourne et al.	6,621,386	B2	9/2003	Drackner et al.
5,417,588	A	5/1995	Olson et al.	6,692,285	B2	2/2004	Islam

6,733,337	B2	5/2004	Kodaira	
6,767,248	B1	7/2004	Hung	
6,805,584	B1	10/2004	Chen	
6,817,896	B2	11/2004	Derenthal	
6,830,479	B2	12/2004	Holliday	
6,848,940	B2	2/2005	Montena	
6,910,910	B2	6/2005	Cairns	
6,921,283	B2	7/2005	Zahlit et al.	
6,939,169	B2	9/2005	Islam et al.	
7,114,990	B2	10/2006	Bence et al.	
7,189,097	B2	3/2007	Benham	
7,192,308	B2	3/2007	Rodrigues et al.	
7,473,128	B2	1/2009	Montena	
7,566,236	B2	7/2009	Malloy et al.	
7,587,244	B2	9/2009	Olbertz	
7,753,705	B2	7/2010	Montena	
7,828,595	B2	11/2010	Mathews	
7,833,053	B2	11/2010	Mathews	
2002/0013088	A1	1/2002	Rodrigues et al.	
2004/0048514	A1	3/2004	Kodaira	
2004/0077215	A1	4/2004	Palinkas et al.	
2004/0102089	A1	5/2004	Chee	
2004/0224552	A1	11/2004	Hagmann et al.	
2004/0229504	A1	11/2004	Liu	
2005/0042919	A1	2/2005	Montena	
2005/0164553	A1	7/2005	Montena	
2005/0208827	A1	9/2005	Burris et al.	
2006/0110977	A1	5/2006	Mathews	
2008/0102696	A1	5/2008	Montena	
2008/0113554	A1	5/2008	Montena	
2008/0311790	A1	12/2008	Malloy et al.	
2010/0081321	A1*	4/2010	Malloy et al.	439/578
2010/0081322	A1*	4/2010	Malloy et al.	439/578

FOREIGN PATENT DOCUMENTS

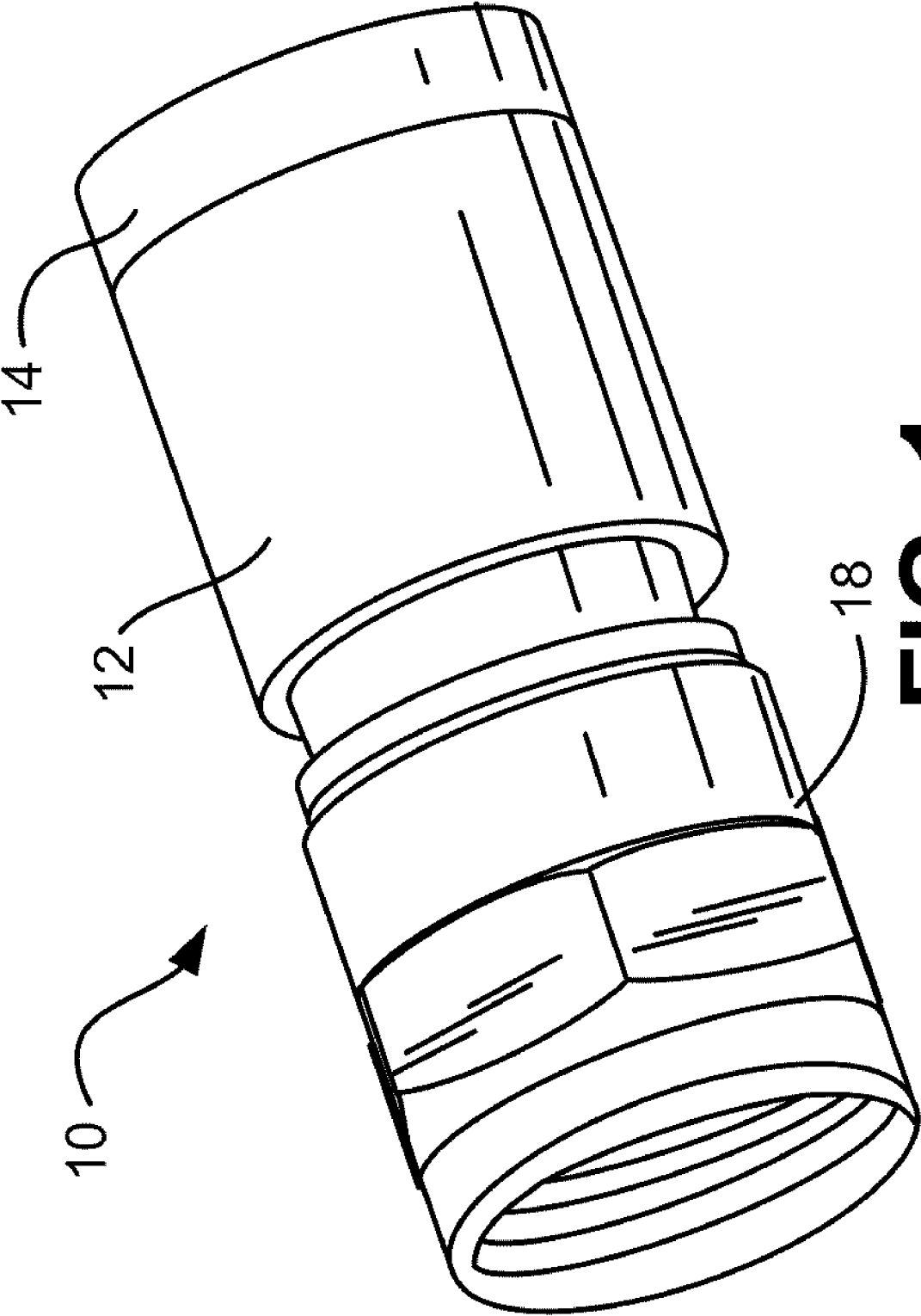
DE	47931	10/1888
DE	1 117 687	11/1961
DE	1 515 398	11/1962
DE	1 191 880	4/1965
DE	2 221 936	5/1972
DE	2 225 764	5/1972
DE	2 261 973	12/1972
DE	32 11 008 A1	10/1983

DE	102289	7/1987
DE	41 28 551 A1	3/1992
EP	0 072 104	2/1983
EP	0 116 157	8/1984
EP	0 167 738	1/1986
EP	0 265 276 B1	4/1988
FR	2 232 846	6/1974
FR	2 234 680	6/1974
FR	2 462 798	2/1980
FR	4 494 508	5/1982
FR	2 524 722	10/1983
GB	589697	3/1945
GB	1087228	10/1967
GB	1 270 846	4/1972
GB	2 019 665 A	10/1979
GB	2 079 549 A	1/1982
GB	2 331 634 A	5/1999
JP	03071571	3/1991
JP	03-280369	12/1991
JP	10-228948	8/1998
JP	2002075556	3/2002
WO	WO 93/24973	12/1993
WO	WO 96/08854	3/1996
WO	WO 01/86756 A1	11/2001

OTHER PUBLICATIONS

Notice of Allowance for U.S. Appl. No. 12/568,179, mail date Mar. 21, 2011, 10 pages.  
 Office Action for U.S. Appl. No. 12/568,160, mail date Jul. 22, 2010, 7 pages.  
 Office Action for U.S. Appl. No. 12/568,160, mail date Sep. 8, 2010, 10 pages.  
 Response to Office Action for U.S. Appl. No. 12/568,160, filed Aug. 23, 2010, 3 pages.  
 Response to Office Action for U.S. Appl. No. 12/568,160, filed Mar. 7, 2011, 37 pages.  
 Statement of Substance of Interview, Terminal Disclaimer and Statement Under 37 CFR 3.73(b) for U.S. Appl. No. 12/568,179, filed Jun. 30, 2011, 5 pages.

\* cited by examiner



**FIG. 1**

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.