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Brewing material lid and container for a beverage brewer

Abstract

A brewing material container for a beverage brewer includes a receptacle and a lid. The receptacle is configured to receive and hold beverage brewing material and to be placed in a brewing chamber of the beverage brewer, and includes a base, and a sidewall extending from the base and terminating in an open end. The lid is configured to engage with the open end of the sidewall to at least partially cover the open end. The lid includes a number of lid openings configured to receive a corresponding respective number of injection nozzles of the beverage brewer. The receptacle base and/or the receptacle sidewall includes a receptacle opening configured to allow fluid flow from an interior of the receptacle to an exterior of the receptacle.

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References Cited

U.S. PATENT DOCUMENTS

Patent No.	Issued Date	Patentee Name	U.S. Cl.	CPC
1377316	12/1920	Clermont	N/A	N/A
2234397	12/1940	Bentz	N/A	N/A
2242684	12/1940	Stuart	N/A	N/A
2407118	12/1945	Waters	N/A	N/A
2433815	12/1946	Laforge	N/A	N/A
2443520	12/1947	Schwartz et al.	N/A	N/A
2546874	12/1950	Siegrist	N/A	N/A
3022411	12/1961	Soper et al.	N/A	N/A
3115822	12/1962	Totten	N/A	N/A
3120170	12/1963	Garte	N/A	N/A
3136241	12/1963	Price	N/A	N/A
3199682	12/1964	Scholtz	N/A	N/A
3224360	12/1964	Wickenberg et al.	N/A	N/A
3316388	12/1966	Wickenberg et al.	N/A	N/A
3336857	12/1966	Knodt et al.	N/A	N/A
3384004	12/1967	Perlman et al.	N/A	N/A
3403617	12/1967	Lampe	N/A	N/A
3405630	12/1967	Weber, III	N/A	N/A
3583308	12/1970	Williams	N/A	N/A
3592126	12/1970	Dombrowik	N/A	N/A
3607297	12/1970	Fasano	N/A	N/A
3695168	12/1971	Van Brunt	N/A	N/A
3713377	12/1972	Arnett et al.	N/A	N/A
3757670	12/1972	Laama et al.	N/A	N/A
3844206	12/1973	Weber	N/A	N/A
3948157	12/1975	Layre	N/A	N/A
3958502	12/1975	Vitous	N/A	N/A
4052318	12/1976	Krebs	N/A	N/A
4086848	12/1977	Hahn	N/A	N/A
4143590	12/1978	Kasakoff	N/A	N/A
4152464	12/1978	Brody et al.	N/A	N/A
4164644	12/1978	Remsnyder et al.	N/A	N/A
D255313	12/1979	Elkerbout	N/A	N/A

4221670	12/1979	Ziemek	N/A	N/A
4253385	12/1980	Illy	N/A	N/A
4286515	12/1980	Baumann et al.	N/A	N/A
4510853	12/1984	Takagi	N/A	N/A
4550024	12/1984	le Granse	N/A	N/A
4603621	12/1985	Roberts	N/A	N/A
4653390	12/1986	Hayes	N/A	N/A
4656932	12/1986	Kopp	N/A	N/A
4676396	12/1986	Mamolou	N/A	N/A
4703687	12/1986	Wei	N/A	N/A
4704954	12/1986	Mollenhoff	N/A	N/A
4706555	12/1986	Nakamura et al.	N/A	N/A
4721835	12/1987	Welker	N/A	N/A
4735719	12/1987	Benedict	N/A	N/A
4739697	12/1987	Roberts	N/A	N/A
4800089	12/1988	Scott	N/A	N/A
4832845	12/1988	Hendretti	N/A	N/A
4833979	12/1988	Garulli et al.	N/A	N/A
4836592	12/1988	Roberts	N/A	N/A
4848815	12/1988	Molloy	N/A	N/A
4858523	12/1988	Helbling	N/A	N/A
4865737	12/1988	McMichael	N/A	N/A
4882982	12/1988	Muttoni	N/A	N/A
4957217	12/1989	Ritson	N/A	N/A
4967648	12/1989	Helbling	N/A	N/A
4986172	12/1990	Hunnicut, Jr.	N/A	N/A
4995310	12/1990	van der Lijn et al.	N/A	N/A
4998463	12/1990	Precht et al.	N/A	N/A
5000082	12/1990	Lassota	N/A	N/A
5012059	12/1990	Boatman	N/A	N/A
5012629	12/1990	Rehman et al.	N/A	N/A
5028328	12/1990	Long	N/A	N/A
5046409	12/1990	Henn	N/A	N/A
5072660	12/1990	Helbling	N/A	N/A
5097984	12/1991	Meisner et al.	N/A	N/A
5120439	12/1991	McFarlin	N/A	N/A
5123335	12/1991	Aselu	N/A	N/A
5171457	12/1991	Acuff et al.	N/A	N/A
5190653	12/1992	Herrick et al.	N/A	N/A
5197374	12/1992	Fond	N/A	N/A
5233914	12/1992	English	N/A	N/A
5242702	12/1992	Fond	N/A	N/A
5265517	12/1992	Gilbert	N/A	N/A
5287797	12/1993	Grykiewicz et al.	N/A	N/A
5298267	12/1993	Gruenbacher	N/A	N/A
5325765	12/1993	Sylvan et al.	N/A	N/A
5335589	12/1993	Yerves, Jr. et al.	N/A	N/A
5343799	12/1993	Fond	N/A	N/A
5347916	12/1993	Fond et al.	N/A	N/A
5363745	12/1993	Lin	N/A	N/A

5398596	12/1994	Fond	N/A	N/A
5401328	12/1994	Schmitz	N/A	N/A
5403605	12/1994	Smith et al.	N/A	N/A
5406882	12/1994	Shaanan	N/A	N/A
5463932	12/1994	Olson	N/A	N/A
5490448	12/1995	Weller et al.	N/A	N/A
5526733	12/1995	Klawuhn et al.	N/A	N/A
5531152	12/1995	Gardosi	N/A	N/A
5562941	12/1995	Levy	N/A	N/A
5582730	12/1995	Hugentobler	N/A	N/A
5582731	12/1995	Gianfranco	N/A	N/A
5635233	12/1996	Levinson	N/A	N/A
5636563	12/1996	Oppermann et al.	N/A	N/A
5649412	12/1996	Binacchi	N/A	N/A
5669287	12/1996	Jefferson, Jr. et al.	N/A	N/A
5676041	12/1996	Glucksman et al.	N/A	N/A
5775206	12/1997	St-Gelais	N/A	N/A
5829340	12/1997	Yang	N/A	N/A
5840189	12/1997	Sylvan et al.	N/A	N/A
5865094	12/1998	Kealy	N/A	N/A
5870943	12/1998	Levi et al.	N/A	N/A
5887510	12/1998	Porter	N/A	N/A
D407602	12/1998	Patel	N/A	N/A
5895672	12/1998	Cooper	N/A	N/A
5897899	12/1998	Fond	N/A	N/A
5910205	12/1998	Patel	N/A	N/A
5913964	12/1998	Melton	N/A	N/A
5924563	12/1998	Salyers	N/A	N/A
5931329	12/1998	Wu	N/A	N/A
5932260	12/1998	Soughan	N/A	N/A
6065609	12/1999	Lake	N/A	N/A
6079315	12/1999	Beaulieu et al.	N/A	N/A
D431423	12/1999	Ohm et al.	N/A	N/A
6136352	12/1999	Silverstein et al.	N/A	N/A
6138551	12/1999	Bauer et al.	N/A	N/A
6189438	12/2000	Bielfeldt et al.	N/A	N/A
6202542	12/2000	Melton	N/A	N/A
RE37173	12/2000	Jefferson, Jr. et al.	N/A	N/A
6227102	12/2000	Sham et al.	N/A	N/A
6231909	12/2000	Levinson	N/A	N/A
6250209	12/2000	Pope	N/A	N/A
6253662	12/2000	Zelson	N/A	N/A
6263781	12/2000	Calagui	N/A	N/A
6273293	12/2000	Carlson	N/A	N/A
D454433	12/2001	Peter	N/A	N/A
6440256	12/2001	Gordon et al.	N/A	N/A
6499388	12/2001	Schmed	N/A	N/A
D474110	12/2002	Sweeney	N/A	N/A
D474111	12/2002	Lazaris	N/A	N/A
6589577	12/2002	Lazaris et al.	N/A	N/A

6606938	12/2002	Taylor	N/A	N/A
6607762	12/2002	Lazaris et al.	N/A	N/A
6645537	12/2002	Sweeney et al.	N/A	N/A
6655260	12/2002	Lazaris et al.	N/A	N/A
6658989	12/2002	Sweeney et al.	N/A	N/A
6662955	12/2002	Lassota	N/A	N/A
6688490	12/2003	Carlson	N/A	N/A
6708600	12/2003	Winkler et al.	N/A	N/A
6727484	12/2003	Policappelli	N/A	N/A
6740345	12/2003	Cai	N/A	N/A
6758130	12/2003	Sargent et al.	N/A	N/A
6777007	12/2003	Cai	N/A	N/A
6786136	12/2003	Cirigliano et al.	N/A	N/A
6832542	12/2003	Hu et al.	N/A	N/A
6843165	12/2004	Stoner	N/A	N/A
D502362	12/2004	Lazaris et al.	N/A	N/A
6904840	12/2004	Pfeifer et al.	N/A	N/A
6948420	12/2004	Kirschner et al.	N/A	N/A
6968775	12/2004	Burrows et al.	N/A	N/A
7047870	12/2005	Gantt et al.	N/A	N/A
7081263	12/2005	Albrecht	N/A	N/A
7131369	12/2005	Gantt et al.	N/A	N/A
7165488	12/2006	Bragg et al.	N/A	N/A
7318374	12/2007	Guerrero	N/A	N/A
7320274	12/2007	Castellani	N/A	N/A
D567021	12/2007	Bach et al.	N/A	N/A
7377089	12/2007	Rapparini	N/A	N/A
7387063	12/2007	Vu et al.	N/A	N/A
7461587	12/2007	Guerrero	N/A	N/A
7703381	12/2009	Liverani et al.	N/A	N/A
7730829	12/2009	Hammad	N/A	N/A
7836819	12/2009	Suggi Liverani et al.	N/A	N/A
7946217	12/2010	Favre et al.	N/A	N/A
8047127	12/2010	Lin	N/A	N/A
8087347	12/2011	Halliday et al.	N/A	N/A
8221813	12/2011	Boul	N/A	N/A
8327754	12/2011	Kirschner et al.	N/A	N/A
D677120	12/2012	DeMiglio et al.	N/A	N/A
D688095	12/2012	DeMiglio et al.	N/A	N/A
8561524	12/2012	DeMiglio	99/305	A47J 31/0689
D694579	12/2012	Khubani	N/A	N/A
8707855	12/2013	DeMiglio	99/279	A47J 31/0689
8720320	12/2013	Rivera	N/A	N/A
9023412	12/2014	Doleac et al.	N/A	N/A
9149149	12/2014	Oh	N/A	N/A
9232871	12/2015	Rivera	N/A	N/A
9232872	12/2015	Rivera	N/A	N/A
9271597	12/2015	Rivera	N/A	N/A
9402501	12/2015	Vu	N/A	A47J 31/407

9795243	12/2016	Rivera	N/A	N/A
9844292	12/2016	Rivera	N/A	N/A
9907425	12/2017	Rivera	N/A	N/A
10071851	12/2017	Vu	N/A	N/A
10154751	12/2017	DeMiglio et al.	N/A	N/A
10252854	12/2018	Vu	N/A	N/A
10336531	12/2018	Trombetta et al.	N/A	N/A
10450130	12/2018	Hansen	N/A	N/A
10450131	12/2018	Norton et al.	N/A	N/A
D927250	12/2020	Kruger et al.	N/A	N/A
11534017	12/2021	DeMiglio et al.	N/A	N/A
2001/0043954	12/2000	Sweet	N/A	N/A
2002/0005367	12/2001	Zelson	N/A	N/A
2002/0023543	12/2001	Schmed	N/A	N/A
2002/0035929	12/2001	Kanba et al.	N/A	N/A
2002/0048621	12/2001	Boyd et al.	N/A	N/A
2002/0059870	12/2001	Walters, Jr. et al.	N/A	N/A
2002/0078831	12/2001	Cai	N/A	N/A
2002/0144604	12/2001	Winkler et al.	N/A	N/A
2002/0148356	12/2001	Lazaris et al.	N/A	N/A
2002/0148358	12/2001	Sweeney et al.	N/A	N/A
2003/0006185	12/2002	Hepler	N/A	N/A
2003/0041739	12/2002	Cai	N/A	N/A
2003/0167928	12/2002	Mulle et al.	N/A	N/A
2003/0200872	12/2002	Lin	N/A	N/A
2003/0213370	12/2002	Hammad et al.	N/A	N/A
2003/0222089	12/2002	Hale	N/A	N/A
2003/0226449	12/2002	Carasso et al.	N/A	N/A
2004/0005384	12/2003	Cai	N/A	N/A
2004/0020368	12/2003	Cai	N/A	N/A
2004/0020922	12/2003	Alves	N/A	N/A
2004/0045443	12/2003	Lazaris et al.	N/A	N/A
2004/0118290	12/2003	Cai	N/A	N/A
2004/0182247	12/2003	Guerrero	N/A	N/A
2004/0244600	12/2003	Lalanne-Eygun	N/A	N/A
2005/0051478	12/2004	Karanikos et al.	N/A	N/A
2005/0115415	12/2004	Arrick	N/A	N/A
2005/0160918	12/2004	Winstanley et al.	N/A	N/A
2005/0172819	12/2004	Chen et al.	N/A	N/A
2005/0223904	12/2004	Laigneau et al.	N/A	N/A
2005/0236323	12/2004	Oliver et al.	N/A	N/A
2005/0257695	12/2004	Dobranski et al.	N/A	N/A
2005/0266122	12/2004	Franceschi	N/A	N/A
2005/0284303	12/2004	Zell et al.	N/A	N/A
2006/0019000	12/2005	Zanetti	N/A	N/A
2006/0107841	12/2005	Schifferle	N/A	N/A
2006/0159815	12/2005	Crook et al.	N/A	N/A
2006/0174769	12/2005	Favre et al.	N/A	N/A
2006/0196364	12/2005	Kirschner	N/A	N/A
2006/0230944	12/2005	Neace et al.	N/A	N/A

2006/0236871	12/2005	Ternite et al.	N/A	N/A
2006/0254428	12/2005	Glucksman et al.	N/A	N/A
2007/0148290	12/2006	Ternite et al.	N/A	N/A
2007/0151460	12/2006	Beck	N/A	N/A
2007/0175334	12/2006	Halliday et al.	N/A	N/A
2007/0186784	12/2006	Liverani et al.	N/A	N/A
2007/0277677	12/2006	Roberg	N/A	N/A
2009/0057332	12/2008	Arzola	N/A	N/A
2009/0229470	12/2008	Dorfmueller	N/A	N/A
2009/0229471	12/2008	Lun et al.	N/A	N/A
2010/0047419	12/2009	Boul	N/A	N/A
2010/0083843	12/2009	Denisart et al.	N/A	N/A
2010/0288131	12/2009	Kilber et al.	N/A	N/A
2010/0303964	12/2009	Beaulieu et al.	N/A	N/A
2011/0073607	12/2010	Fu et al.	N/A	N/A
2011/0209623	12/2010	Leung et al.	N/A	N/A
2011/0274802	12/2010	Rivera	N/A	N/A
2012/0058226	12/2011	Winkler et al.	N/A	N/A
2012/0097602	12/2011	Tedford	N/A	N/A
2012/0118880	12/2011	Wnek	N/A	N/A
2012/0148709	12/2011	Kamerbeek et al.	N/A	N/A
2012/0207895	12/2011	Rivera	N/A	N/A
2012/0207896	12/2011	Rivera	N/A	N/A
2012/0258210	12/2011	Wong et al.	N/A	N/A
2012/0276264	12/2011	Rivera	N/A	N/A
2012/0285330	12/2011	Demiglio	99/279	A47J 31/0689
2012/0285334	12/2011	Demiglio et al.	N/A	N/A
2012/0308688	12/2011	Peterson et al.	N/A	N/A
2012/0321748	12/2011	Otto et al.	N/A	N/A
2012/0328739	12/2011	Nocera	N/A	N/A
2013/0017303	12/2012	Vu	N/A	N/A
2013/0025466	12/2012	Fu et al.	N/A	N/A
2013/0055903	12/2012	Deuber	N/A	N/A
2013/0095212	12/2012	Beer	N/A	N/A
2013/0156897	12/2012	Goldstein	N/A	N/A
2013/0340626	12/2012	Oh	N/A	N/A
2014/0004231	12/2013	Norton et al.	N/A	N/A
2014/0008368	12/2013	Severini	N/A	N/A
2014/0124435	12/2013	Jackson	N/A	N/A
2014/0141128	12/2013	Trombetta et al.	N/A	N/A
2014/0245893	12/2013	Vu	N/A	N/A
2014/0245895	12/2013	DeMiglio	99/323	A47J 31/0689
2014/0287105	12/2013	Husband et al.	N/A	N/A
2015/0050391	12/2014	Rapparini	N/A	N/A
2015/0068404	12/2014	Rivera	99/323	A47J 31/4492
2015/0173555	12/2014	Sumiyoshi et al.	N/A	N/A
2015/0175347	12/2014	Empl	N/A	N/A
2016/0016727	12/2015	Katz	N/A	N/A
2016/0029833	12/2015	Lin	N/A	N/A
2016/0068336	12/2015	Biesheuvel et al.	N/A	N/A

2016/0157660	12/2015	Rivera	N/A	N/A
2016/0206133	12/2015	Rivera	N/A	N/A
2016/0311608	12/2015	Accursi	N/A	N/A
2017/0036854	12/2016	Doglioni Majer	N/A	N/A
2017/0158422	12/2016	Andreae et al.	N/A	N/A
2017/0251861	12/2016	DeMiglio	N/A	A23F 5/262
2017/0258260	12/2016	Hsu	N/A	N/A
2018/0116444	12/2017	Rivera	N/A	N/A
2018/0162634	12/2017	De Ruvo	N/A	N/A
2018/0290821	12/2017	Domenighini	N/A	A47J 31/0689
2019/0000262	12/2018	Vu	N/A	A47J 31/407
2020/0245805	12/2019	DeMiglio et al.	N/A	N/A
2021/0127889	12/2020	Sasena	N/A	A47J 31/0689

FOREIGN PATENT DOCUMENTS

Patent No.	Application Date	Country	CPC
2615077	12/2003	CN	N/A
102011012860	12/2011	DE	N/A
1183195	12/2001	EP	N/A
1364605	12/2004	EP	N/A
1837294	12/2007	EP	N/A
2580145	12/2014	EP	N/A
100535744	12/2005	KR	N/A
248659	12/1993	NZ	N/A
2005/092160	12/2004	WO	N/A
2008125256	12/2007	WO	N/A
2009011982	12/2008	WO	N/A
2010094026	12/2009	WO	N/A

OTHER PUBLICATIONS

Keurig® My K-Cup® Reusable Coffee Filter, <https://www.Keurig.com/My-K-Cup%C2%AE-Reusable-Coffee-Filter/p/My-K-Cup-Universal-Reusable-Coffee-Filter#>. cited by applicant
My-Kap lid for K-Cup, https://www.amazon.com/My-Kap-Kaps-K-Cups-Brush-2-45-Ounce/dp/B0076I4OGK/ref=cm_cr_ar_p_d_product_top?ie=UTF8. cited by applicant
Perfect Pod EZ-Cup, <https://www.perfectpod.com/products/ez-cup-2>. cited by applicant

Primary Examiner: Chou; Jimmy

Attorney, Agent or Firm: IP Strategies

Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS (1) This is a continuation of co-pending U.S. patent application Ser. No. 18/202,810, which was filed on May 26, 2023; which in turn is a continuation of co-pending U.S. patent application Ser. No. 17/084,827, which was filed on Oct. 30, 2020, which claims priority from U.S. Provisional Application for Patent No. 63/094,867, which was filed on Oct. 21, 2020; the disclosures of all of which are incorporated herein in their entireties. (2) This is also related to U.S. patent application Ser. No. 15/855,776, which was filed on Dec. 27, 2017; U.S. patent application Ser. No. 15/790,398, which was filed on Oct. 23, 2017; U.S.

patent application Ser. No. 12/960,496, which was filed on Dec. 4, 2010; U.S. patent application Ser. No. 11/777,831, which was filed on Jul. 13, 2007; U.S. patent application Ser. No. 14/276,919, which was filed on May 13, 2014 and issued on Sep. 12, 2017 as U.S. Pat. No. 9,756,974; U.S. patent application Ser. No. 13/436,667, which was filed on Mar. 30, 2012 and issued on Mar. 1, 2016 as U.S. Pat. No. 9,271,597; U.S. patent application Ser. No. 13/436,690, which was filed on Mar. 30, 2012 and issued on Jan. 12, 2016 as U.S. Pat. No. 9,232,871; U.S. patent application Ser. No. 13/546,875, which was filed on Jul. 11, 2012 and issued on Jan. 12, 2016 as U.S. Pat. No. 9,232,872; and U.S. patent application Ser. No. 17/514,451, which was filed on Oct. 29, 2021; the disclosures of all of which are incorporated herein in their entireties.

FIELD OF THE INVENTION

(1) This invention generally relates to accessories for beverage brewers, and more particularly, relates to an adapter assembly configured to provide operative compatibility between a beverage brewer and a beverage brewing material.

BACKGROUND OF THE INVENTION

(2) Various types of beverage brewers, including single-serve beverage brewers, have been developed and are popular for home brewing of coffee and other beverages. These machines are generally designed with brewing chambers adapted to receive a small packet, pod, or cartridge of ground coffee or other beverage brewing material. After the beverage packet is placed in the brewing chamber, the machine injects hot water into the packet to produce a quantity, often a single serving, of freshly brewed beverage. Some machines have brewing chambers configured to receive pods that are small, flattened disk-shaped filter packages of beverage material, while other machines are configured to accommodate larger, cup-shaped beverage filter cartridges, or cartridges having other configurations.

(3) One particular type of beverage brewer designed to accommodate a beverage filter cartridge is manufactured and sold by Keurig Inc. of Wakefield, MA. The machine has a brewing chamber dimensioned to receive cartridges such as those sold under the brand K-Cup®. These cartridges are configured in the form of a container having a permeable filter packet containing a dry beverage medium such as ground coffee beans, which is disposed in the interior of the container. The machine also has upper and lower puncture needles. In operation, the upper needle punctures the top lid of the cartridge and injects pressurized water through the opening onto the beverage medium while the lower needle punctures the bottom of the cartridge to create an outlet for outflow of the brewed beverage. A recent model, the K-Supreme, has multiple upper injection needles or nozzles to provide hot water to the brewing material.

(4) The configuration of the brewing chamber of the above-described beverage brewer inherently limits the use of the machine to disposable cartridges. Use of these machines results in waste in the form of a disposed cartridge for each brewed beverage. The amount of trash generated by users of these cartridges multiplies quickly. Another consequence is that users of this machine or similar brewers designed for similar cartridges would have to purchase a different machine to brew beverage from pods made for other brands. The use of multiple machines can be costly and inconvenient, and can cause inefficient use of counter space. Thus, there is a need for an apparatus and method for modifying beverage brewers configured for cartridges so that they can also be used to brew beverages from off-brand pods.

(5) Additionally, conventional automated pod brewers typically include a brewing chamber adapted to receive an individual pod. During the brewing process, hot water is injected into the brewing chamber across the surface of the pod while brewed beverage is directed to flow out of an outlet into a cup. Some brewed beverage connoisseurs believe that brewed beverage brewed using pod brewers does not have as good flavor extraction as brewed beverage brewed by baristas who usually tamp or compact the beverage brewing material prior to brewing. Thus, there is a need for an improved pod brewing system.

(6) Further, conventional automated pod brewers are not designed to brew brewed beverage or other beverages from loose grounds. A user of such a brewer is limited in selection to the beverage brewing material available for sale in pods, and beverage brewers configured for cartridges limit users to beverage brewing material available for purchase in cartridges. Often, the selection of beverages is limited to coffee, although tea, herbal beverages, yerba maté, and other brewed beverages and infusions are popular and could be brewed using such a machine if an alternative to the pre-packaged cartridges would be available. A brewed beverage drinker who likes a brewed beverage that is only available as loose grounds or as whole beans also cannot brew this brewed beverage in one of these types of brewers.

BRIEF SUMMARY OF THE INVENTION

(7) According to an aspect of the invention, a brewing material container for a beverage brewer includes a receptacle and a lid. The receptacle is configured to receive and hold beverage brewing material and to be placed in a brewing chamber of the beverage brewer, and includes a base, and a sidewall extending from the base and terminating in an open end. The lid is configured to engage with the open end of the sidewall to at least partially cover the open end. The lid includes a number of lid openings configured to receive a corresponding respective number of injection nozzles of the beverage brewer. The receptacle base and/or the receptacle sidewall includes a receptacle opening configured to allow fluid flow from an interior of the receptacle to an exterior of the receptacle.

(8) The lid openings can be, for example, through-holes. The lid can also include dispersion bays arranged at the through-holes and configured to protrude toward an interior of the receptacle when the lid engages with the open end of the sidewall to at least partially cover the open end. The dispersion bays can be configured to protrude from a surface of the at the through-holes, and include apertures. For example, at least some of the apertures can be shaped as slots.

(9) The receptacle can include a mesh material arranged to cover at least the receptacle opening.

(10) The receptacle opening can include a base opening in the base of the receptacle.

(11) The receptacle opening can include a number of sidewall openings in the sidewall of the receptacle.

(12) The receptacle can include a recessed portion in which the base and the sidewall of the receptacle are recessed inward toward an interior of the receptacle. In the recessed portion, the base can be recessed at least partially toward the open end of the receptacle, and the sidewall can be recessed at least partially toward a center of the base. The recessed portion can form a protrusion into the interior of the receptacle, and a corresponding enclosure on an exterior of the receptacle. The enclosure can be configured to receive an outflow nozzle of the beverage brewer and to isolate the outflow nozzle from the interior of the receptacle.

(13) The receptacle can include a rim at least partially surrounding a periphery of the open end of the sidewall.

(14) The lid can be hingedly connected to the receptacle.

(15) According to another aspect of the invention, a brewing material container for a beverage brewer includes holding means for receiving and holding beverage brewing material and for placement in a brewing chamber of the beverage brewer. The holding means includes base means, and sidewall means for extending from the base means and terminating in an open end. The brewing material container also includes covering means for engaging with the open end of the sidewall means and at least partially covering the open end. The covering means includes a number of cover receiving means for receiving a corresponding respective plurality of injection nozzles of the beverage brewer. The base means and/or the sidewall means includes fluid flow means for allowing fluid flow from an interior of the holding means to an exterior of the holding means.

(16) The cover receiving means can include through-holes. The cover receiving means can also include dispersion means arranged at the through-holes, for protruding toward an interior of the holding means when the covering means engages with the open end of the sidewall means to at least partially cover the open end. The dispersion means can include flow control means for

allowing fluid to pass through the dispersion means and for directing flow of the fluid toward the interior of the holding means.

(17) The holding means can include screen means for covering at least the fluid flow means to allow fluid flow from the interior of the holding means to the exterior of the holding means while retaining the beverage brewing material in the interior of the holding means.

(18) The holding means can include recessed isolation means for receiving an outflow nozzle of the beverage brewer and for isolating the outflow nozzle from the interior of the holding means. The recessed isolation means is defined by a portion of the holding means in which the base means and the sidewall means are recessed inward toward an interior of the holding means.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) FIG. 1A is a front view of an exemplary beverage brewer according to the invention.

(2) FIG. 1B is a side view of an exemplary beverage brewer according to the invention.

(3) FIG. 1C is a top view of an exemplary beverage brewer according to the invention.

(4) FIG. 2 is a side view of an exemplary beverage brewer with an open lid allowing placement of a brewing material holder according to the invention.

(5) FIG. 3 is a functional diagram of an exemplary beverage brewer.

(6) FIG. 4 is a perspective view of an exemplary filter paper cup.

(7) FIG. 5A is a side view of an exemplary filter cup according to the invention.

(8) FIG. 5B is a top view of an exemplary filter cup according to the invention.

(9) FIG. 6A shows a side view of an exemplary filter paper cup according to the invention.

(10) FIG. 6B shows a top view of an exemplary filter paper cup according to the invention.

(11) FIG. 6C shows a side view of an exemplary filter paper cup.

(12) FIG. 7 shows a cross-sectional view of an exemplary filter paper cup taken along line **80-80** of FIG. 6B.

(13) FIG. 8A is a cross-sectional side view of an exemplary brewing material holder according to the invention.

(14) FIG. 8B is a cross-sectional side view of an exemplary brewing material holder according to the invention.

(15) FIG. 9 shows a cross-sectional view of an exemplary brewing material holder according to the invention.

(16) FIG. 10A shows a side view of an exemplary filter paper cup with a separate receptacle and paper lid according to the invention.

(17) FIG. 10B shows a top view of an exemplary filter paper cup with a separate receptacle and paper lid according to the invention.

(18) FIG. 10C shows a side view of an exemplary filter paper cup.

(19) FIG. 11A shows a top and side view of an exemplary brewing material holder according to the invention.

(20) FIG. 11B shows a bottom and side view of an exemplary brewing material holder according to the invention.

(21) FIG. 12 shows a top and side view of an exemplary brewing material holder according to the invention.

(22) FIG. 13 shows a cross-sectional view of an exemplary brewing material holder according to the invention taken along line **86-86** of FIG. 12.

(23) FIG. 14A is a top view of a lid of an exemplary brewing material holder according to the invention.

(24) FIG. 14B is a bottom view of a lid of an exemplary brewing material holder according to the invention.

invention.

(25) FIG. 15A shows a side view of an exemplary brewing material holder according to the invention.

(26) FIG. 15B shows a side view of an exemplary brewing material holder according to the invention.

(27) FIG. 15C shows a top view of an exemplary brewing material holder according to the invention.

(28) FIG. 15D shows a bottom side view of an exemplary brewing material holder according to the invention.

(29) FIG. 16A shows a top view of an exemplary brewing material holder according to the invention, with the lid removed.

(30) FIG. 16B shows a bottom side view of an exemplary brewing material holder according to the invention, with the lid removed.

(31) FIG. 17A is a schematic illustration of an exemplary pod adaptor assembly according to the invention.

(32) FIG. 17B is a schematic illustration of an exemplary receptacle of the pod adaptor assembly of FIG. 17A.

(33) FIG. 17C is a schematic illustration of an exemplary receptacle of the pod adaptor assembly of FIG. 17A.

(34) FIG. 18 is a schematic illustration of an exemplary pod adaptor assembly according to the invention.

(35) FIG. 19A is a schematic illustration of an exemplary pod adaptor assembly according to the invention.

(36) FIG. 19B is a schematic illustration of an exemplary receptacle of the pod adaptor assembly of FIG. 19A.

(37) FIG. 20 is a schematic illustration of an exemplary pod adaptor assembly of FIG. 19 used in combination with a beverage brewer having upper and lower puncturing devices.

(38) FIG. 21 is a schematic illustration of an exemplary pod adaptor assembly according to the invention.

(39) FIG. 22 is a cross-sectional view of an exemplary pod brewing chamber according to the invention.

(40) FIG. 23 is an illustration of another embodiment of the invention.

(41) FIG. 24 is an isometric top view of an exemplary beverage brewing container according to the invention.

(42) FIG. 25 is an isometric bottom view of an exemplary beverage brewing container according to the invention.

(43) FIG. 26 is a top view of an exemplary beverage brewing container according to the invention.

(44) FIG. 27 is a bottom view of an exemplary beverage brewing container according to the invention.

(45) FIG. 28 is a side view of an exemplary beverage brewing container according to the invention.

(46) FIG. 29 is a side view of an exemplary beverage brewing container according to the invention.

(47) FIG. 30 is an isometric view of an exemplary beverage brewing container according to the invention.

(48) FIG. 31 is a side view of an exemplary beverage brewing container according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

(49) The following description is not to be taken in a limiting sense, but is presented for the purpose of describing one or more preferred embodiments of the invention. The scope of the invention should be determined with reference to the claims.

(50) With reference to FIGS. 1A-1C, an exemplary beverage brewer 10 includes a body 12, an opening lid 14, a lid handle 16, a water container 18, a display 20, controls 22, a platform 24 and a

mouth **12a**. A brewed beverage pitcher **26** can be arranged on the platform **24** inside the mouth **12a** and has a pitcher lid **28**. The beverage brewer **10** provides a flow of hot water through beverage brewing material to produce a brewed beverage. The flow of water can be heated by one of any known mechanisms, for example, through the use of an electrical heating coil or a conductive coating on tubing carrying the water.

(51) With reference to FIG. 2, the beverage brewer **10** lid **14** can be opened to allow placement of a brewing material holder **30** according to the invention inside the brewing chamber of the beverage brewer **10**. The lid **14** includes a lid hinge **14a** and a water tube **15**, which carries heated water into the lid **14**. A pad **17** is arranged on a bottom surface of the lid **14** and presses against the brewing material holder **30** when the lid **14** is closed, and in cooperation with other elements, tamps beverage brewing material contained in the brewing material holder **30**. A nozzle **19** extending down from the closed lid **14** directs the flow of hot water into the brewing material holder **30**.

(52) Referring to FIG. 3, in general a beverage brewer **10** includes a water tank **18**, a water pump **21**, a heater **13**, a check valve **23**, and a nozzle **18**. The water heater **13** can include a heating coil or a resistive coating or any other mechanism for heating water. The check valve **23** limits the water pressure at the nozzle **19** by returning some of the water flow to the water tank **18**. While a water pump **21** is shown to provide a flow of water to the nozzle **19**, other mechanisms can be used to provide a forced flow of water.

(53) The brewing material holder can be used with a filter paper cup to hold the beverage brewing material. A perspective view of an exemplary filter paper cup **40'** with a folding cup lid **40d** is shown in FIG. 4. The cup lid **40d** can be folded over the rim **40c** to reduce or prevent beverage brewing material from escaping during tamping or brewing. The lid **40d** can also include a perforation **40e** centered on the lid **40d** to allow the nozzle **19** to enter and/or inject the hot flow of water into the beverage brewing material **41**, but the lid **40d** need not include the perforation **40e**. The filter paper cup **40'** can be used in the beverage brewing material containers described herein, and can be used in a beverage brewing machine having a cavity for receiving the filter paper cup **40'**. While the cup **40'** is preferably made from filter paper, the cup can also be made from a reusable mesh, such as a nylon or metal mesh.

(54) Referring to FIGS. 5A and B, an exemplary filter cup **80** includes a ring **84** made of a material sufficiently strong to hold shape while in the brewing machine during the process of brewing a beverage. Filter material **82** is attached to the ring **84**. The filter cup **80** can be insertable into the brewing material holder or directly into the brewing chamber as a replacement for the filter paper cup **40**.

(55) Referring to FIGS. 6A-6C, and a cross-sectional view taken along line **80-80** of FIG. B shown in FIG. 7, the lid **40d** of an exemplary filter paper cup **40** can be folded over the cup **40** and sealed after loose brewing material **41** is placed into the cup. The filter paper cup **40** includes a receptacle **40g** formed from a bottom **40b**, sides **40a**, and a rim (for example, and annular rim) **40c**, and a cover (or lid) **40d** configured to close the receptacle **40g** to hold brewing material in the filter paper cup **40**. The filter paper cup **40** can be constructed using heat and/or moisture to form permanent folds (or pleats) **40f** in the sides **40a** and rim **40c** of the filter paper cup **40** to add strength and rigidity to the filter paper cup **40** so that the filter paper cup **40** retains its shape after forming, and preferably, adhesive is applied to the rim **40c** and/or the sides **40a** to retain the pleats and add strength and rigidity to the filter paper cup **40**. Preferably, the filter paper cup **40** is constructed from heat-sealable filter paper having a heat-reacting film on at least one side, which film causes the pleats to adhere to adjacent pleats when heat is applied following forming. The pleats in the rim **40c** are generally continuations of the pleats in the sides **40a**. The filter paper cup **40** can alternatively be corrugated to retain shape. The filter paper cup **40** thus has structure for maintaining a substantially (that is, within the ability of the paper to maintain a shape) frustoconical or cylindrical shape.

(56) As mentioned above, the filter paper cup **40** can have, for example, a frusto-conical shape or a

cylindrical shape, for example, having a base diameter D1, an inner top diameter D2, an outer top diameter (the diameter of the rim) D3, and a height H. For particular applications to be suitable for use in a conventional brewing machine, the diameter D1 can be approximately 1.25 inches, the diameter D2 can be approximately 1.625 inches, the diameter D3 can be approximately 2.125 inches, and the height H can be approximately one inch. The rim 40c in this case is therefore approximately 0.25 inches wide, and the lid 40d has approximately the same diameter D3 as the rim 40c.

(57) The filter paper cup 40 can be sold or otherwise provided in an empty state for filling by a user, or as a pre-packaged single-serving (or larger) beverage brewing material pod. When provided for filling by the user, the filter paper cup 40 is preferably provided with the cover 40d attached to the rim 40c of the receptacle 40g. For example, the filter paper cup 40 can be made from a single piece of filter paper cut into two circular portions attached by a hinge 40h, or by two separately cut pieces of filter paper attached at the hinge 40h. The filter paper cup 40 can be provided as two pieces, in which case the cover 40d is detached from the receptacle 40g, but this can be more difficult to use. A user can seal the cover 40d to the rim 40c of the receptacle 40g, or the cover 40d can be held to the receptacle 40g by sandwiching the filter paper cup 40 between a holder lid 32a and holder body 31. When the filter paper cup 40 is sold as a ready-to-use pod containing brewing material, the pod is generally fabricated using filter paper off two separate rolls as described below.

(58) An exemplary pod holder 30r with a tamping spring 36 and bottom tamper 34, the filter paper cup 40 containing a portion of beverage brewing material 41, and the holder lid 32a ready to attach to a holder body 31a is shown in FIG. 8A, and with the holder lid attached to the holder body with the rim of the filter paper cup sandwiched between the lid and brewing material holder and the tamping spring and bottom tamper pushing the filter paper cup against the lid according to the invention is shown in FIG. 8B. The rim 40c is arranged on a top edge of the holder body 31 and is sandwiched between the holder lid 32a and body 31a when the lid 32a is attached to the body 31a, thereby holding the filter paper cup 40 against the holder lid 32a while a needle inserted through the holder lid 32a will puncture the folding paper lid 40d and inject hot water into the filter paper cup 40. Thus the brewing material 41 can be retained in the filter paper cup 40 solely by attaching a lid 32a of the pod holder 30r to the base 31a of the pod holder to sandwich the rim 40c of the filter paper cup 40 and the outer edge of the cover 40d between the lid of the pod holder to the base of the pod holder.

(59) The inside diameter D4 of the mouth of the pod holder 30r can be approximately the same size as the Diameter D2 of the filter paper cup 40, for example, approximately 1.625 inches, thereby facilitating the capture and sandwiching of the rim 40c and edge of the cover 40d between the holder lid 32a and body 31a. Sandwiching of the rim 40c and edge of the cover 40d between the holder lid 32a and body 31a both seals the brewing material in the filter paper cup 40 to prevent or restrict the escape of the brewing material from the filter paper cup 40 during brewing and provides a taut cover 40d facilitating puncturing the cover 40d by a needle used to inject heated water into the filter paper cup 40 during brewing. The body 31a can have a cylindrical or frusto-conical shape, or any other shape that would function advantageously in the brewing chamber.

(60) Another exemplary embodiment of the brewing material holder 30s is shown in FIG. 9. The brewing material holder 30a is similar to the brewing material holder 30s but omits the tamping spring 36 and bottom tamper 34.

(61) A filter paper cup 40'' with separate receptacle 40g'' and paper lid 40d'' is shown in FIGS. 10A-C. The filter paper cup 40'' includes the features of the filter paper cup 40, except the lid 40d'' is not hingedly attached to the receptacle 40g'' and is a separate piece. Further, the receptacle 40g'' can be used in the beverage brewer without the lid 40d''.

(62) An exemplary brewing material holder 30t with a lid 32h is shown in FIGS. 11A and B, with a lid 32h removed in FIG. 12, and in cross-section with the lid 32h removed, taken along line 86-86 of FIG. 12, in FIG. 13. The base 31d includes multiple side windows 350 and multiple bottom

windows **352**, for example four side windows **350** and bottom windows **352**. The windows **350** and **352** allow unrestricted flow from a filter material receptacle **40g''** (see FIG. **10C**) arranged inside the base **31d**, and allow portions of the filter material receptacle **40g''** to expand into and through the windows **350** and **352**. Alternatively, the windows **350** and **352** can be covered with a mesh material, such as nylon or metal mesh, in which case a filter material receptacle **40g''** is not necessary.

(63) An exemplary lid **32h** of the brewing material holder **30t** is shown in FIGS. **14A** and **B**. The lid **32h** includes a round skirt **354** which cooperates with an annular interior surface **356** of the base **31d** to sandwich the filter material receptacle **40g''**, retaining the filter material receptacle **40g''** in the base **31d**.

(64) Additional views of the brewing material holder **30t** are shown in FIGS. **15A-D**, and views with the lid **32h** removed are shown in FIGS. **16A** and **B**. The brewing material holder **30t** can be fabricated to any dimensions, such as an exemplary embodiment in which the base **31d** has a height H_b of about 1.45 inches and a base bottom diameter D_b of about 1.35 inches; wall windows **350** with a height H_w of between 0.5 inches and one inch, such as about 0.72 inches measured to a peak of an arched opening, and a window width W_w of between 0.3 inches and 0.7 inches, such as about 0.45 inches.

(65) An exemplary method for manufacturing the filter paper cups includes providing filter paper to a machine and forming a receptacle in the filter paper. Heat and/or steam is used to make the filter paper retain the receptacle shape. The receptacle and the lid are then cut out. To manufacture a pod according to the invention, the receptacle is filled with brewing material, which can be tamped in the receptacle. The lid is positioned over the receptacle and the lid is attached to the receptacle. The pod can be nitrogen flushed and sealed. Either the filter paper cups or the completed pods can be manufactured, for example, in printing press or assembly line style.

(66) Although the invention is described above as placing loose beverage brewing material in a brewing material holder, the invention can also be practiced by placing prepackaged beverage brewing material, for example a beverage brewing material pod, into the brewing material holder. Further, although the brewing material holder is generally described as having a snap-on lid, a screw-on lid can also be used, and in general the various elements of different embodiments described above can be mixed to provide combinations of elements that are intended to be included within the scope of the invention.

(67) Further, although a filter paper cup has been described, a filter cup made of nylon mesh or metal mesh is equally suitable, and any brewing material holder or combination of beverage brewer and brewing material holder including a filter chamber that holds beverage brewing material as described above is intended to be included within the scope of the invention regardless of the specific filter material. Further, those skilled in the art will recognize that the features and elements of the various described embodiments of the invention disclosed herein can be combined to provide various combinations, all of which combinations are intended to be included within the scope of the invention.

(68) As discussed above, a conventional brewing cartridge includes a pierceable shell and contains brewing material held in the cartridge by filter material. An upper needle, or liquid injector probe, of the beverage brewer penetrates the top of the shell, and a bottom needle element, typically offset from the center, penetrates the shell from below when the brewing chamber is closed on the cartridge. The upper needle enters the brewing cartridge and contacts the brewing material, whereas the lower needle pierces the shell but typically avoids contact with the brewing material. A cartridge-style, beverage brewer sold under the brand Keurig is configured to use a brewing cartridge sold under the brand K-Cup. The K-Cup brewing cartridges have a frusto-conical shape, a height of about 1-¾ inches, a top rim having a diameter of about 2 inches, a diameter just below the top rim of about 1.8 inches, and a base having a diameter of about 1.43 inches.

(69) FIG. **17A** illustrates a pod adaptor assembly **100** of an embodiment of the invention. As shown

in FIG. 17A, the pod adaptor assembly **100** generally includes a cup-shaped, that is, truncated cone-shaped, receptacle **102**, and a cover **104** adapted to sealingly engage with the receptacle **102**. The receptacle **102** has a substantially circular base **106** and sidewalls **108** extending upward from the base **106** to define a housing **110** having an upper opening **112**. The base **106** has an interior surface **114** and an exterior surface **116**, which are separated by a distance **118** so that the interior surface **114** is elevated above the exterior surface by the distance. Preferably, the distance **118** is between about 1 and 20 mm. For example, in a particular exemplary embodiment the distance is about 10 mm. Although some embodiments of the pod assembly utilize a cup-shaped receptacle, the receptacle can assume other shapes and configurations such as square or cylindrical without departing from the spirit and scope of the invention.

(70) As also shown in FIG. 17A, a passageway **120** is formed in the base **106** of the receptacle **102**, extending between the interior and exterior surfaces **114**, **116** of the base **106**. The passageway **120** is configured to receive a needle-like structure that is typically mounted in the beverage brewer to puncture the bottom of a disposable cup-shaped filter. The location of the passageway **120** relative to the base **106** is preferably selected to match the relative location of the needle-like structure in the brewer. In a particular embodiment, the passageway **120** is slightly off-center from the base to correspond to the location of the needle. In operation, the needle-like structure is designed to move upward toward the bottom of the base **104** of the receptacle a first distance so as to puncture the bottom of the cup-shaped filter. To prevent the needle-like structure from hitting against the base of the receptacle or piercing the beverage pod inside the receptacle, the passageway **120** allows the needle-like structure to move freely without jamming against the receptacle or the pod. The passageway **120** also serves the purpose of providing an outlet for brewed beverage to flow out of the receptacle into a drinking or serving vessel. In one embodiment, the passageway **120** is substantially circular and has a diameter of about 5 mm and a length of about 10 mm.

(71) As FIG. 17A further shows, a plurality of spaced-apart protrusions **122** are formed across the interior surface **114** of the base. The protrusions **122** collectively provide a plurality of spaced-apart raised surfaces for the pod to rest against. When the pod is placed inside the receptacle and is resting against the protrusions, the gaps between the pod and the interior surface **114** of the base allow brewed beverage to flow unobstructed from the pod down through the passageway **120**. In one implementation, the protrusions can be configured in the manner shown in FIG. 17B. As shown in FIG. 17B, the protrusions **122** comprise a plurality of circular and oval-shaped protrusions extending upward from the lower surface **114** of the receptacle **102**. In some implementations, a plurality of ribs **122** are also arranged to extend outwardly from an interior side surface **123** of the receptacle **102**.

(72) As also shown in FIG. 17A, the cover **104** of the assembly **100** has a circular configuration and a seal **124** sized to sealingly engage the cover **104** to the receptacle opening **112** in a manner known in the art. The cover **104** has an opening **126** configured to accommodate a liquid inlet probe or other inlet port from the brewer. The liquid inlet probe is typically used to pierce the cup-shaped filter cartridge and introduce pressurized hot water into the cartridge. In certain embodiments, the cover **104** also has a circular recessed section **128** disposed concentrically around the opening **126**. The circular recessed section **128** is adapted to mate with a correspondingly shaped circular protrusion formed on the brewer. The cover **104** includes a rim resting on a top edge of the receptacle **102** at the top of the sidewall **108**. In some embodiments, the rim extends radially beyond the top edge.

(73) In certain embodiments, the assembly **100** further includes a locking mechanism adapted to lock the cover in place relative to the receptacle. FIG. 17C illustrates one example of such locking mechanism. As shown in FIG. 17C, a plurality of notches **126** are formed in the interior rim of the receptacle. The notches **126** are configured to engage with mating protrusions **130** formed on an interior rim **132** of the cover **104**. When the cover **104** is positioned over the opening of the receptacle **102**, the protrusions **130** on the interior rim **132** of the cover preferably slidably engage

with the notch so as to lock the cover in place. It will be appreciated that other locking mechanisms known in the art can also be used to lock the cover in place.

(74) FIG. 18 illustrates a pod adaptor assembly **200** of another embodiment of the invention. The pod adaptor assembly **200** generally includes a cup-shaped receptacle **202** adapted to receive a pod and a cover **204** adapted to sealingly engage with the receptacle **202**. The receptacle **202** has a base **206** having a downwardly sloping interior surface **208** supported by a plurality of legs **210**. A passageway **212** extends downwardly from the exterior surface **214** of the base. The passageway **212** is adapted to guide and allow the needle-like structure from the brewer to extend upward without hitting against the receptacle or piercing the pod inside the receptacle. The passageway **212** also permits outflow of the brewed beverage from the receptacle. In one embodiment, the passageway **212** has a diameter of about 5 mm and a length of about 1 mm to 20 mm. The location of the passageway **212** relative to the base **206** is preferably selected to correspond to the location of the upward-moving needle in the brewer. In one embodiment, the passageway **212** is offset by about 1-5 mm from the center of the base. As also shown in FIG. 18, the cover **204** of the assembly **200** has an opening **216** formed therethrough, which is adapted to allow insertion of a liquid inlet probe from the brewer.

(75) FIG. 19A is a schematic illustration of a pod adaptor assembly **300** of another embodiment of the invention. The pod adaptor assembly **300** generally includes a receptacle **302** and a cover **304** adapted to sealingly engage with the receptacle **302**. The receptacle **302** has a substantially circular base **306** and sidewalls **308** extending upward from the base **306** defining a housing **310** having an upper opening **312**. The base **306** has an annular raised portion **314** extending upward from a lower surface **316** of the base and an opening **324** formed in a portion of the base that is not raised. The raised portion **314** provides a raised support surface **318** for a pod **320** so that the pod **320** does not contact and possibly block the opening **324** for brewed beverage to flow through. Preferably, the lower surface of the pod **320** is also elevated from the opening **324** by a distance **328** that is calculated to accommodate the upward extension of the puncture needle in the brewer during operation. In one embodiment, the distance **328** is between about 5 to 20 mm. In certain embodiments, a plurality of spaced-apart protrusions **330** are formed on the raised support surface **318**, the protrusions **330** providing upward support for the pod **320**. The gaps between the protrusions facilitate flow of brewed beverage from the pod toward the opening **324**.

(76) FIG. 19B illustrates radially-extending protrusions **330** of one implementation for the receptacle **300** of FIG. 19A. As shown in FIG. 19B, the protrusions **330** comprise a plurality of spaced-apart ribs disposed on an interior side wall **331** and both the raised and non-raised interior surface portions **318**. As also shown in FIG. 19B, the opening **324** is located at an offset from the center of the base of the receptacle. The location is selected to correspond to the location of the puncture needle when the assembly is placed in the brewing chamber of the brewer.

(77) FIG. 20 is a schematic illustration of the pod adaptor assembly of FIG. 3A used in conjunction with a single-serving beverage brewer in brewing a beverage pod. As shown in FIG. 4, the pod adaptor assembly **300** is placed in a brewing chamber **400** of a single-serving brewer **402** known in the art and configured for brewing cup-shaped filter cartridges. In one embodiment, the single-serving brewer **402** is sold under the brand Keurig. As also shown in FIG. 20, a beverage pod **404**, preferably containing beverage brewing material, is positioned inside the receptacle **302** of the assembly **100**. The pod **402** preferably fits snugly inside the receptacle **302** and rests against the protrusion **330**. In operation, a lower puncture needle **406** of the brewer extends upward through the passageway **116** of the receptacle **102**. As described above, the lower puncture needle **406** is designed to extend upward and puncture the bottom of a cup-shaped cartridge that is normally inside the brewing chamber. To adapt the brewer **402** for use in brewing beverage pods that do not need to be punctured, the opening **324** in the base of the receptacle allows the puncture needle **406** to extend into the receptacle and the distance **328** between the opening **324** and the pod **404** is dimensioned such that the puncture needle **406** does not contact and pierce the pod **404**. The

distance advantageously provides an offset that accommodates the upward movement of lower puncture needle **406** without piercing the pod or damaging the needle. As also shown in FIG. **20**, a liquid inlet probe **408** is extended downwardly through an opening **332** formed in the cover **304** of the assembly **300**. In some embodiments, the pod **404** is positioned such that the liquid inlet probe **408** punctures the pod **404**. In other embodiments, the pod **404** is positioned such that the liquid inlet probe **408** does not puncture the pod.

(78) FIG. **21** is a schematic illustration of another embodiment of the pod adaptor assembly **500** of the invention, showing a cross-section of the assembly when used with a beverage pod **502**. The pod adaptor assembly **500** includes a receptacle **504** and a cover **506** adapted to sealingly engage with the receptacle **504**. The assembly **500** further includes a biasing mechanism **512** adapted to elevate and press the pod **502** against the cover **506** when the cover is sealingly engaged with the receptacle **504**. In one implementation, the pressure applied against the pod advantageously compacts the beverage brewing material in the pod which has a similar effect as tamping the beverage brewing material. In certain embodiments, the assembly has an inlet **508** for introducing pressurized hot water into the receptacle and an outlet **510** for allowing outflow of brewed beverage. In one implementation as shown in FIG. **21**, the inlet **508** is an opening formed in the cover **506** that is also adapted to receive a liquid inlet probe, which is part of a single-serving beverage brewers designed for cup-shaped cartridges. Also in the implementation shown in FIG. **21**, the outlet **510** includes an opening formed in the base of the receptacle to allow for outflow of brewed beverage from the receptacle as well as unobstructed upward extension of a puncture needle that is part of certain single-serving beverage brewers designed for cup-shaped cartridges. By pressing the pod up against the cover, the pod is also pressed up against the inlet **508** through which hot water flows into the chamber. This advantageously “traps” the hot water in the pod for a longer period of time and produces a stronger and more consistent brewed beverage. In addition to being an adaptor assembly for cup-shaped brewers, the receptacle having a biasing device as shown in FIG. **21** can also serve as a brewing chamber for pod brewers.

(79) In one embodiment, the biasing mechanism **512** is a spring positioned inside the receptacle and extending upward from the base. The flexibility of the spring is advantageous because it provides an adjustable support surface that can accommodate and apply pressure against pods of a variety of different sizes. In cases of thicker or larger pods, the spring can be simply compressed more to accommodate the pods. The spring can push the pods of different thicknesses and sizes up against the hot water being introduced into the receptacle. It will also be appreciated that a variety of different biasing mechanisms can also be used to press the pod against the inlet hot water. For example, the biasing mechanism can be a spring attached to the interior of the cover. As described above, pushing the pod against the hot water inlet compacts the beverage brewing material and also causes much less water to escape from the pod during the brewing process. As a result, a much stronger and consistent cup of brewed beverage is produced.

(80) FIG. **22** is a cross-sectional view of a pod brewing chamber **600** of an embodiment of the invention incorporating the novel biasing mechanism. The pod brewing chamber **600** includes a cup-shaped housing **602** and a cover **604**. Preferably, the housing **602** is sized to receive a circular beverage pod. In a particular exemplary embodiment, the housing **602** has a height of about 44.5 mm, a lower diameter of about 35 mm and an upper diameter of about 45.5 mm. As also shown in FIG. **22**, the brewing chamber **600** further includes a spring **606** extending upward from the bottom of the housing and a platform **608** attached to the upper end of the spring **606**. In one implementation, the platform **608** includes a circular support having ribs arranged in a spaced-apart configuration across the upper surface of the platform **608**. In operation, a beverage brewing material pod is inserted into the housing by being placed on the platform **608** and pressed downwardly until the pod is inside the housing and the cover **604** can be placed over the opening of the housing. As also shown in FIG. **22**, the cover **604** has an opening **612** through which hot water can be injected into the housing. The brewing chamber further includes a lower opening **614** for

brewed beverage to flow out of the chamber.

(81) The unique concept of providing a biasing mechanism to press a beverage brewing material pod against the hot water inlet in a pod brewer can be applied to a variety of different beverage brewing systems. Preferably, when the spring is fully compressed, the force applied to a pod is preferably about 1.5 lb. The pressure range exerted against the pod can preferably range between 0 and 1.5 lbs. Thus, for example, a large pod will have more pressure exerted on it than a smaller pod, because the spring is compressed more. Moreover, the cross-section of the platform is preferably smaller than the diameter of the bottom so it can travel up and down the cup-shaped housing. In certain embodiments, the platform serves two functions by preventing the needle in certain single beverage brewers from perforating the pod from the bottom and also by pushing the pod evenly against the hot water inlet so when brewing the brewed beverage produced is consistent.

(82) As described above, the pressure applied against the pod by the biasing mechanism compacts the beverage brewing material and serves the function of tamping the beverage brewing material. Thus, less beverage brewing material is required to be packaged in a pod to brew a cup of brewed beverage using the pod adapter of the invention. It will be appreciated that the biasing mechanism can also be incorporated in any of the pod adaptor assemblies described herein. The pod adaptor assembly of the invention can be made of a variety of different materials, including metal and plastics.

(83) It should be apparent to those of skill in the art that the various embodiments of the invention as described herein can be used with loose grounds held by an open pouch made of water-permeable material. Such a pouch can be filled with beverage brewing material of the user's choice and inserted into the pod adapter in place of a pod as described above. The water-permeable pouch can include a lid made of like material, either provided separately or hingedly attached to the pouch. Alternatively, the pod adapter can include a screen over the lower opening, or on the sidewall, so that loose grounds can be placed directly into the pod adapter for brewing, without the need for a pod or water-permeable pouch.

(84) In summary, a beverage brewing container according to the invention is configured to replace a brewing cartridge in a brewing chamber of a beverage brewer, and preferably is made of material that allows it to be reusable. The container is positionable within the brewing chamber and is configured to hold brewing material while brewed by the beverage brewer. Depending on the particular embodiment or the needs of the user, the brewing material can be sealed in a pod, can be loosely placed in a pouch made of water-permeable material, or can be placed directly into the beverage brewing container. The brewing material can be beverage brewing material, or any other material, ground or otherwise, that can be used to produce a beverage by flowing a liquid through it.

(85) The beverage brewing container includes a receptacle configured to receive and support the brewing material, and a cover. The receptacle includes a passageway, a base, and at least one sidewall. The passageway, for example, can be arranged in the base of the receptacle, but can be arranged in the sidewall instead, or in addition if more than one passageway is advantageous. The passageway provides fluid communication between an interior of the receptacle and the brewing chamber, that is, allows the brewed beverage to flow from the container into the brewing chamber of the beverage brewer. The passageway can have a serpentine arrangement, or can be wholly unobstructed, to provide direct flow.

(86) The base of the receptacle has an interior surface and an exterior surface and is configured to avoid contact with the needle-like structure of the beverage brewer. The at least one sidewall extends upward from the interior surface of the base and is also configured to avoid contact with the needle-like structure. The cover is adapted to sealingly engage with a top edge of the at least one sidewall and includes an opening. Thus, the container can accept input fluid through the opening in the cover to allow the beverage material to be brewed, and can provide the

corresponding outflow of fluid through the passageway. Because contact with the needle-like structure of the beverage brewer is avoided, the outflow substantially avoids the needle-like structure, which would normally accept the outflow. By avoiding the needle, the outflow can proceed elsewhere into the brewing chamber or directly into a mug or other vessel used to serve the beverage.

(87) As shown in FIG. 23, the receptacle **700** can also include an extension **701** extending from the exterior surface of the base such that at least a portion of the base is raised a predetermined distance above the brewing chamber when the lower end of the extension **701** is in contact with the brewing chamber. As shown, the extension **701** can extend from a periphery of the base. Alternatively, or in addition, an extension **702** can extend from an interior portion of the base. In the latter case, the extension can include one or more apertures **703** at least partially covered by a screen material. This would allow loose grounds to be placed directly in the receptacle **700** for brewing, without the need for a pod or water-permeable pouch. The apertured extension **702** can be included as the passageway described above, or can be included in addition to the passageway, to provide an additional avenue for beverage outflow. With or without the extension, the passageway likewise can include a screen **704**, to allow for brewing of loose grounds.

(88) In addition to or in place of the inner extension **702** and/or the passageway **704**, at least one portion of the sidewall **705** can include an aperture **706** that is at least partially covered by a screen material. This would allow for outflow from the receptacle **700** for a beverage brewed from loose grounds.

(89) The cover **707** can include a perforated bay **708** extending into the receptacle from the opening of the cover. The inflow fluid received through the bay **708** is dispersed onto the grounds in a manner that would depend in part on the character of the perforations in the bay **708**. For example, the perforations shown in FIG. 23 are thin apertures arranged in a longitudinal direction with respect to the length of the bay **708**. However, it is contemplated that circumferential apertures, round holes, or any other manner of perforation can be advantageously used.

(90) With reference to FIGS. 24-31, an exemplary beverage brewing container **801** according to the invention is configured to be disposed within a brewing chamber of a beverage brewer and to hold brewing material while brewed by the beverage brewer. The container **801** includes a receptacle **802** configured to receive the brewing material, and a lid **803**. The receptacle **802** includes a base **804**, and at least one sidewall **805** extending from the base and terminating in an open end preferably having a rim **806**.

(91) The receptacle **802** is configured to hold beverage brewing material during the brewing process in order to brew a beverage. In order to provide fluid communication from an interior of the receptacle **802** to an exterior of the receptacle **802** (such as into a brewing chamber or directly into a serving or drinking container), either the sidewall **805** or the base **804** or both can have openings to allow brewed beverage to pass out of the receptacle **802**. These openings can be covered in a mesh, screen, or other liquid-permeable material configured to retain the brewing material while allowing liquid to pass through. For example, the sidewall **805** can include one or more sidewall openings **807**, and/or the base **804** can include one or more base openings **808**. The base **804** and/or sidewall **805** can also include a recessed enclosure **809** that is configured to accommodate and isolate an outflow nozzle or needle of the brewing machine, preventing outflow from the receptacle **802** through the outflow needle, which is kept outside of the receptacle **802**. Of course, instead of the recessed enclosure **809**, any accommodation for the outflow nozzle or needle of the brewing machine, such as those described above, can be provided instead.

(92) The lid **803** is configured to engage with the rim **806** to close off the open end of the sidewall **805**. The lid **803** includes one or more openings **810** that are configured to accommodate the injection nozzle(s) or needle(s) providing water to the receptacle **802**. These openings **810** can be simple through-holes, or can include apertured, for example slotted, dispersion bays as shown, configured to disperse the received water, or can have any other configuration that accommodates

the injection nozzles and provides the water to the interior of the receptacle **802**. The lid **802** can be hingedly attached to the receptacle **802** as shown in the exemplary embodiment, or can be attached in some other manner, or can be completely detachable as a separate element.

(93) Five such openings are shown in the exemplary embodiment, but the openings **810** can be provided in any number, so as to be suitable for use with brewing machines having any number of injection nozzles. Also, the openings **810** can have uniform configurations, or can be configured differently to accommodate different configurations of injection nozzles or to provide different dispersion profiles into the beverage brewing material, for example by having bays that have different sizes, different shapes, and/or different aperture configurations. For example, the exemplary embodiment shown includes a larger opening **810a** and four smaller openings **810b**, configured as dispersion bays. In this configuration, one opening **810a** is larger and includes a larger bay and therefore can accommodate a larger main injection nozzle, and the other openings **810b** can accommodate smaller injection nozzles. One or more of the openings or bays can be provided that are wide enough to accommodate more than one injection nozzle if desired, or a single opening or bay can be provided that is wide enough to accommodate all of the injection nozzles.

(94) Alternatively, an entire portion of the lid can be recessed to accommodate multiple injection nozzles, or all of the injection nozzles, and the recess can include one or more openings or bays arranged so as to control the dispersion of water onto the brewing material regardless of the geometrical arrangement of the injection nozzles.

(95) Thus, the container **801** is configured to accept input fluid through the opening(s) **810** and to provide a corresponding outflow of fluid through the sidewall opening(s) **807** and/or base opening(s) **808**, while avoiding a lower needle of the beverage brewer.

(96) The lid **803** can also include a closure element **811**, for example configured to latch at a contour **812** in the rim **806**, in order to secure the lid during the brewing process. The lid **803** can also include a seal **813** configured to engage the rim in a fluid-tight manner.

(97) In use, beverage brewing material can be placed in the receptacle **802**, the lid **803** can be closed over the open end of the receptacle **802** onto the rim **806**, and the container **801** can be placed into the chamber of a beverage brewer. When the brewer is actuated, injection needles or nozzles will be received by one or more of the lid openings **810** and will inject water into the interior of the receptacle **802**, either directly or through dispersion protrusions or bays, where it will wet and soak the beverage brewing material to brew a beverage. The recessed enclosure **809** or other configuration will prevent an outflow of the brewed beverage through the outflow needle or nozzle of the brewer, and the beverage will instead flow out through the base opening(s) **808** and/or sidewall opening(s) **807** and eventually into a drinking or serving container.

(98) The invention has been described by way of example and in terms of preferred embodiments. However, it is to be understood that the invention is not strictly limited to the particularly disclosed embodiments. To the contrary, various modifications, as well as similar arrangements, are included within the spirit and scope of the invention. The scope of the appended claims, therefore, should be accorded the broadest possible interpretation so as to encompass all such modifications and similar arrangements.

Claims

1. A brewing material container for a beverage brewer, comprising: a receptacle; and a lid; wherein the receptacle is configured to receive and hold beverage brewing material and to be placed in a brewing chamber of the beverage brewer, and includes: a base, and a sidewall extending from the base and terminating in an open end; wherein the base is arranged in a raised position above a lower end of the sidewall to accommodate an outflow nozzle of the beverage brewer below the base; and wherein the lid is configured to engage with the open end of the sidewall, and includes a

plurality of lid through-holes configured to receive a corresponding respective plurality of injection nozzles of the beverage brewer.

2. The container of claim 1, wherein the receptacle includes a receptacle opening configured to allow fluid flow out of the receptacle from an interior of the receptacle.

3. The container of claim 1, wherein the receptacle base includes the receptacle opening.

4. The container of claim 1, wherein the receptacle sidewall includes the receptacle opening.

5. The container of claim 1, wherein the through-holes include a central through-hole arranged at a center of the surface of the lid, and a plurality of other through-holes arranged around the central through-hole.

6. The container of claim 5, wherein the other through-holes are arranged around the central through-hole in an arrangement corresponding to an arrangement of the injection nozzles of the beverage brewer.

7. The container of claim 5, wherein: each said other through-hole is arranged on a circle about the central through-hole; and the other through-holes are not equally spaced on the circle.

8. The container of claim 5, wherein the plurality of other through-holes are four other through-holes.

9. The container of claim 1, wherein the receptacle includes a mesh material arranged to cover at least the receptacle opening.

10. The container of claim 1, wherein the receptacle opening includes a plurality of sidewall openings in the sidewall of the receptacle.

11. The container of claim 1, wherein the receptacle base is configured to avoid an outflow nozzle of the beverage brewer at a portion of an exterior periphery of the receptacle base.

12. The container of claim 11, wherein the receptacle includes an aperture in the portion of the exterior periphery of the receptacle base.

13. The container of claim 1, wherein the receptacle sidewall is configured to avoid an outflow nozzle of the beverage brewer at a portion of an exterior periphery of the receptacle sidewall.

14. The container of claim 13, wherein the sidewall forms an outer enclosure wall at the portion of the exterior periphery of the sidewall to at least partially enclose the portion of the exterior periphery of the sidewall.

15. The container of claim 13, further comprising an outer enclosure wall at the portion of the exterior periphery of the sidewall to at least partially enclose the portion of the exterior periphery of the sidewall.

16. A brewing material container for a beverage brewer, comprising: holding means for receiving and holding beverage brewing material and for being placed in a brewing chamber of the beverage brewer; and covering means for engaging with an open end of the holding means; wherein the holding means includes: base means, and sidewall means extending from the base means and terminating in the open end; wherein the base means is arranged in a raised position above a lower end of the sidewall means to accommodate an outflow nozzle of the beverage brewer below the base means; and wherein the covering means includes a plurality of cover receiving means for receiving a corresponding respective plurality of injection nozzles of the beverage brewer.

17. The container of claim 16, wherein the holding means includes fluid flow means for allowing fluid flow out of the holding means from an interior of the holding means.

18. The container of claim 16, wherein the base means includes the fluid flow means.

19. The container of claim 16, wherein the sidewall means includes the fluid flow means.

20. The container of claim 16, wherein the plurality of cover receiving means include a central cover receiving means arranged at a center of the covering means, and a plurality of other cover receiving means arranged around the central cover receiving means.

21. The container of claim 20, wherein the plurality of other cover receiving means are arranged around the central cover receiving means in an arrangement corresponding to an arrangement of the injection nozzles of the beverage brewer.

22. The container of claim 20, wherein: each said other cover receiving means is arranged on a circle about the central cover receiving means; and the other cover receiving means are not equally spaced on the circle.
23. The container of claim 20, wherein the plurality of other cover receiving means are four other cover receiving means.
24. The container of claim 16, wherein the holding means includes mesh means for covering at least the fluid flow means.
25. The container of claim 16, wherein the fluid flow means includes a plurality of sidewall means openings in the sidewall means.
26. The container of claim 16, wherein the base means includes the means for avoiding the outflow nozzle of the beverage brewer at a portion of an exterior periphery of the base means.
27. The container of claim 26, wherein the holding means includes an aperture in the portion of the exterior periphery of the base means.
28. The container of claim 16, wherein the sidewall means includes the means for avoiding the outflow nozzle of the beverage brewer at a portion of an exterior periphery of the sidewall means.
29. The container of claim 28, wherein the sidewall means forms outer enclosure wall means at the portion of the exterior periphery of the sidewall means, for at least partially enclosing the portion of the exterior periphery of the sidewall means.
30. The container of claim 28, further comprising outer enclosure wall means at the portion of the exterior periphery of the sidewall means, for at least partially enclosing the portion of the exterior periphery of the sidewall means.
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