

PATENT ASSIGNMENT COVER SHEET

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Stylesheet Version v1.2

Assignment ID: PATI932641

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
Funai Electric Co., Ltd.	03/28/2025
RECEIVING PARTY DATA	
Company Name:	Brady Worldwide, Inc.
Street Address:	6555 West Good Hope Road
City:	Milwaukee
State/Country:	WISCONSIN
Postal Code:	53223
PROPERTY NUMBERS Total: 5	
Property Type	Number
Patent Number:	7118191
Patent Number:	7128391
Patent Number:	7168799
Patent Number:	7198353
Patent Number:	7311386
CORRESPONDENCE DATA	
Fax Number:	
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
Phone:	4142285075
Email:	Brianna_schonenberg@bradycorp.com,patents@bradycorp.com
Correspondent Name:	Brianna M. Schonenberg
Address Line 1:	2221 W. Camden Road
Address Line 4:	Glendale, WISCONSIN 53209
ATTORNEY DOCKET NUMBER:	FECEXPIRED
NAME OF SUBMITTER:	SAISAMONE STURTEVANT
SIGNATURE:	/SAISAMONE STURTEVANT/
DATE SIGNED:	04/03/2025
Total Attachments: 30	
source=Exhibit C to APA - Confirmatory IP Assignment Agreement (Execution Version)#page1.tiff	

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**EXHIBIT C TO ASSET PURCHASE AGREEMENT
CONFIRMATORY INTELLECTUAL PROPERTY ASSIGNMENT AGREEMENT**

This Confirmatory Intellectual Property Assignment Agreement (this “**Agreement**”), dated as of April 1, 2025 (“**Effective Date**”), and is entered into by and among Eiji Katayama, in his capacity as the bankruptcy trustee of Funai Electric Co., Ltd., a company organized under the laws of Japan, having a principal place of business at 7-7-1, Nakagaito, Daito, Osaka 574-0013 Japan (the “**Assignor**”), and Brady Worldwide, Inc., a company organized under the laws of the State of Wisconsin, having a principal place of business at 6555 West Good Hope Road, Milwaukee, Wisconsin 53223, U.S.A. (the “**Assignee**”). In this Agreement, the Assignor and the Assignee are each referred to as a “**Party**” or collectively as the “**Parties**”. Capitalized terms used but not otherwise defined herein shall have the meanings assigned to such terms in the Asset Purchase Agreement (as defined below).

WHEREAS, the Assignor and certain of its Affiliates and the Assignee have entered into an Asset Purchase Agreement, dated as of March 28, 2025 (the “**Asset Purchase Agreement**”), and an Intellectual Property Assignment Agreement (the “**IPAA**”), dated as of April 1, 2025, pursuant to which the Assignor and certain of its Affiliates sold, transferred, assigned, conveyed, and delivered to the Assignee, and the Assignee purchased from the Assignor and certain of its Affiliates, the Purchased Assets, including the Intellectual Property Assets; and

WHEREAS, in connection with the transactions contemplated by the Asset Purchase Agreement and the IPAA, the Assignor and the Assignee have agreed to enter into this Agreement: (a) to effect the assignment to the Assignee of the Intellectual Property Assets, including the Trademarks and Patents set forth on Schedule A hereto; and (b) for recording in the United States Patent and Trademark Office and equivalent offices in other jurisdictions.

NOW, THEREFORE, in consideration of the foregoing and the other agreements and covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby irrevocably acknowledged, the Parties hereto agree as follows:

1. Assignment. The Assignor hereby irrevocably sells, conveys, assigns, transfers, and delivers to the Assignee, and the Assignee hereby purchases and accepts from the Assignor, free and clear of all Encumbrances, other than Permitted Encumbrances, all the Assignor’s right, title, and interest in, to, and under the following:

(a) the Intellectual Property Assets, including the:

(i) Trademarks set forth in Schedule A-1 (including all registrations and applications for registration set forth therein, and all extensions and renewals thereof, and all rights (including rights arising under applicable Law) to the words, images, designs, and other indicia of source or origin that are part of such Trademarks), together with all goodwill associated with any of the foregoing;

(ii) Patents set forth in Schedule A-2 (whether provisional or non-provisional and all divisionals, continuations, continuations-in-part, foreign counterparts, and reissues, substitutions, and registrations and applications for registration for any of the foregoing, and all reexaminations, extensions and renewals thereof, and all rights (including rights arising under applicable Law) with respect to the inventions covered by such Patents); and

(iii) any and all other Intellectual Property Assets;

(b) any and all rights of any kind whatsoever of the Assignor in, arising out of, or associated with any and all of the foregoing in any jurisdiction (including state, national, and supranational) throughout the world (whether statutory, common law, or otherwise, including as provided by applicable Law or by international treaties and convention), including the right to: (i) apply for, prosecute, register, and maintain any of the Intellectual Property Assets, including the foregoing set forth in Section 1(a) of this Agreement, and claim priority under applicable Law or international convention; and (ii) grant licenses or other rights or interests in or to any and all of the foregoing;

(c) any and all royalties, fees, income, payments, and other proceeds now or hereafter due or payable with respect to any and all of the foregoing; and

(d) any and all claims and causes of action with respect to any and all of the foregoing, whether accruing before, on, or after the Effective Date, including all rights to and claims for damages, restitution, and injunctive and other legal and equitable relief for past, present, and future infringement, dilution, misappropriation, violation, misuse, breach, or default, with the right but not the obligation to sue for such legal and equitable relief and to collect, or otherwise recover, any such damages.

2. Further Assurances; Power of Attorney.

(a) The Assignor shall, at Assignee's own cost and expense, use its commercially reasonable efforts to promptly execute and deliver, or cause to be executed and delivered (including by applicable Affiliates), all such documents and other instruments (including affidavits, declarations, oaths, assignments, and powers of attorney), and promptly take such other actions, as the Assignee may reasonably request in order to: (i) sell, transfer, convey, assign, and deliver to the Assignee the Intellectual Property Assets; (ii) effectuate the transfer of ownership and control of the Intellectual Property Assets to the Assignee, and cause such Intellectual Property Assets to be registered or enable the Assignee to register such Intellectual Property Assets in the name of the Assignee or its designee; (iii) enable the Assignee to exercise and enjoy the intended rights and benefits of this Agreement; and (iv) record, in any applicable jurisdiction, the assignment of the Intellectual Property Assets to the Assignee.

(b) If the Assignor does not promptly comply with its obligations under this Agreement, the Assignor hereby irrevocably grants to the Assignee power of attorney, and designates and appoints the Assignee as the Assignor's agent and attorney-in-fact, in each case, to execute all documents and other instruments and take all actions, on the Assignor's behalf and in its name, to: (i) sell, assign, transfer, convey, and deliver the Intellectual Property Assets to the Assignee; (ii) further the perfection, prosecution, issuance, maintenance, protection, and enforcement of all Intellectual Property Assets to the fullest extent permitted by Law; and (iii) enable the Assignee to exercise and enjoy the intended rights and benefits of this Agreement to the fullest extent permitted by Law. The Assignor acknowledges and agrees that this power of attorney is coupled with an interest and shall not be affected by the Assignor's subsequent incapacity.

(c) The Assignee acknowledges that on the Closing Date an Assignor's parent Affiliate or another Affiliate (past or present) may be listed as the owner of record in the records of the United States Patent and Trademark Office, or the equivalent offices in any applicable jurisdiction, for some of the Trademarks or Patents included in the Intellectual Property Assets. Assignor shall use its commercially reasonable efforts to provide Assignee with the necessary documents for the correction of such records as soon as possible.

4. Recordal. Each Party hereby authorizes and requests the Commissioner of Patents and the Commissioner of Trademarks of the United States Patent and Trademark Office, and the officials of corresponding or equivalent Governmental Authorities or registrar in any applicable jurisdictions, to record and register this Agreement so as to perfect the Assignee's ownership of the Intellectual Property Assets.

5. General Provisions. Section 10.01 (Expenses), Section 10.02 (Notices), Section 10.04 (Headings), Section 10.05 (Severability), Section 10.07 (Successors and Assigns), Section 10.08 (No Third-Party Beneficiaries), Section 10.09 (Amendment and Modification; Waiver), Section 10.10(a) and Section 10.10(b) (Governing Law; Submission to Jurisdiction; Waiver of Jury Trial), Section 10.11 (Specific Performance), and Section 10.12 (Counterparts) of the Asset Purchase Agreement shall apply to this Agreement, *mutatis mutandis*, as if it had been fully set forth herein.

6. Miscellaneous. The Parties hereto acknowledge and agree that this Agreement is entered into pursuant to the Asset Purchase Agreement. The representations, warranties, covenants, agreements, and indemnities contained in the Asset Purchase Agreement shall not be superseded hereby but shall remain in full force and effect to the full extent provided therein. In the event of any conflict or inconsistency between the terms of the Asset Purchase Agreement and the terms hereof, the terms of the Asset Purchase Agreement shall govern. Whenever the words "include," "includes," or "including" are used in this Agreement, they will be deemed to be followed by the words "without limitation." This Agreement will survive the termination or expiration of the Asset Purchase Agreement.

[Signature Pages Follow]

IN WITNESS WHEREOF, each of the Assignors and the Assignee has caused this Intellectual Property Assignment Agreement to be executed on 28 March, 2025.

ASSIGNOR:

FUNAI ELECTRIC CO., LTD.

By Eiji Katayama 

Name: Eiji Katayama

Title: Bankruptcy Trustee

[Signature Page to Intellectual Property Assignment Agreement]

ASSIGNEE:

BRADY WORLDWIDE, INC.

State of Wisconsin

County of Milwaukee

By 

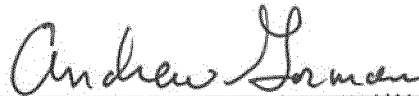
Name: Ann Thornton

Title: Vice President

Signed (or attested) before me on March 27, 2025

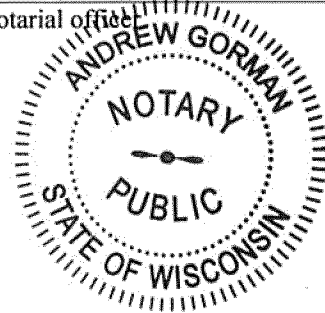
by Andrew Gorman

Name(s) of individual(s)



Signature of notarial officer

Stamp



My commission expires: March 11, 2029

SCHEDULE A

PURCHASED IP ASSET SCHEDULE

Schedule A-1: Trademarks

Unregistered:

Product Name	Description
Apollo	Respiratory drug delivery applicator and cartridge
Bryce 1.0	Single color inkjet printhead. 0.5 inch.
Bryce 1.5	Single color inkjet printhead. 0.5 inch.
Bryce HY	Single color inkjet printhead. 0.5 inch.
Carmel	Single color inkjet printhead. 0.5 inch.
Claron 1.0	Single color inkjet printhead. 0.5 inch.
Claron 1.5	Single color inkjet printhead. 0.5 inch.
Clydesdale Stall	Printhead holder
Eagle	Nasal drug delivery cartridge
Juno	Three color inkjet printhead. 0.66 inch swath.
Juno GMP	Three color inkjet printhead. 0.66 inch swath.
Leto	Nasal drug delivery appliance
Lotus DXL Color	Three color inkjet printhead. 0.25 inch.
Lotus DXL Mono	Single color inkjet printhead. 0.5 inch.
Lotus STD Color	Three color inkjet printhead. 0.25 inch.
Lotus STD Mono	Single color inkjet printhead. 0.5 inch.
Lotus XL Color	Three color inkjet printhead. 0.25 inch.
Lotus XL Mono	Single color inkjet printhead. 0.5 inch.
Lotus XXL Color	Three color inkjet printhead. 0.25 inch.
Lotus XXL Mono	Single color inkjet printhead. 0.5 inch.
Primrose	Well plate dispense cartridge
Sedona	Single color inkjet printhead. 1 inch swath.
Sedona Bulk	Single color inkjet printhead. 1 inch swath.
Sedona Light Solvent	Single color inkjet printhead. 1 inch swath.
Sedona LS	Single color inkjet printhead. 1 inch swath.
Sedona Solvent	Single color inkjet printhead. 1 inch swath.
Sedona XL	Single color inkjet printhead. 1 inch swath.
Selene	Well plate printer
Shetland Stall	Printhead holder

Product Name	Description
Shetland Starter Kit	Printhead controller with holder
Tiger Lily	Well plate dispense cartridge
Verite	Consumer printer
Yellowstone+	Single color inkjet printhead. 0.5 inch.
Yellowstone+ GMP	Single color inkjet printhead. 0.5 inch.
Yellowstone+ HY	Single color inkjet printhead. 0.5 inch.
Zion	Single color inkjet printhead. 0.5 inch.

Schedule A-1: Trademarks (cont'd)

Registered:

[Attached]

Schedule A-2: Patents

Country	Application number	Filing date	Registration date	Registration number	Expiration date	Publication Number
US	10/878838	2004/6/28	2006/10/10	7118191	2025/2/26	US20050285898
US	10/880898	2004/6/30	2007/12/25	7311386	2025/3/11	US20060001703
US	10/878505	2004/6/28	2007/1/30	7168799	2025/3/17	US20050285900
US	10/880936	2004/6/30	2006/10/31	7128391	2025/3/18	US20060001697
US	10/881659	2004/6/30	2007/4/3	7198353	2025/3/22	US20060001698
US	11/754715	2007/5/29	2009/10/13	7600858	2025/3/23	US20070222820
US	10/881806	2004/6/30	2007/4/17	7204574	2025/4/13	US20060001694
US	10/921657	2004/8/19	2007/1/23	7165831	2025/4/13	US20060038851
US	11/106156	2005/4/14	2008/6/3	7381753	2025/4/14	US20050288391
US	11/106244	2005/4/14	2008/4/8	7354476	2025/4/14	US20050282929
DE	05736829.2	2005/4/14	2011/10/12	602005030573	2025/4/14	DE1747303
EP	05736829.2	2005/4/14	2011/10/12	1747303	2025/4/14	EP1747303
CN	2005800161410.7	2005/4/14	2010/9/1	1957111	2025/4/14	CN1957111
US	10/925675	2004/8/25	2007/11/6	7290860	2025/5/24	US20060044349
US	10/937968	2004/9/10	2007/1/30	7169538	2025/5/28	US20060057503
US	11/018203	2004/12/20	2007/2/27	7182447	2025/6/17	US20060132561
US	10/929309	2004/8/30	2006/11/28	7140708	2025/6/29	US20060044335
US	11/173395	2005/7/1	2008/5/6	7368396	2025/8/25	US20070004215
US	10/998388	2004/11/29	2007/9/25	7273275	2025/9/26	US20060114304
US	10/924386	2004/8/20	2008/5/20	7374274	2025/10/1	US20060038852
US	11/008834	2004/12/10	2007/4/10	7201476	2025/10/10	US20060125892
US	11/000763	2004/12/1	2007/10/2	7275815	2025/10/13	US20060114297
US	11/018025	2004/12/20	2007/3/20	7192129	2025/10/25	US20060132553
US	11/670087	2007/2/1	2009/6/2	7540599	2025/10/26	US20070159515
US	11/001227	2004/12/1	2008/8/19	7413915	2025/10/26	US20060115921
US	11/262982	2005/11/1	2007/11/27	7301106	2025/11/1	US20060094264
US	12/336117	2008/12/16	2011/5/10	7938508	2025/11/3	US20090153616
US	29/351827	2009/12/11	2011/12/13	D650418	2025/12/13	
US	29/351828	2009/12/11	2011/12/13	D650419	2025/12/13	
US	29/351832	2009/12/11	2011/12/13	D650420	2025/12/13	
US	11/026504	2004/12/30	2007/8/14	7254890	2025/12/28	US20060146092
US	11/017996	2004/12/21	2008/7/1	7393079	2026/1/10	US20060132534

Country	Application number	Filing date	Registration date	Registration number	Expiration date	Publication Number
US	11/063108	2005/2/22	2008/3/18	7344994	2026/1/30	US20060189144
US	11/153179	2005/6/15	2009/9/22	7591549	2026/2/20	US20060284925
US	10/636928	2003/8/7	2008/11/18	7452041	2026/4/5	US20050030344
US	12/022654	2008/1/30	2011/3/8	7901021	2026/5/8	US20080117242
US	11/457225	2006/7/13	2009/12/1	7625148	2026/5/13	US20070183833
US	11/136832	2005/5/25	2008/9/2	7419231	2026/6/6	US20060268041
US	11/041542	2005/1/24	2009/7/14	7559711	2026/6/10	US20060165466
US	11/254456	2005/10/20	2010/10/19	7815285	2026/6/11	US20070091136
US	11/281091	2005/11/17	2009/10/13	7600853	2026/7/2	US20070109354
US	11/241238	2005/9/30	2008/7/15	7399074	2026/7/27	US20070076066
US	11/241219	2005/9/30	2010/2/2	7654665	2026/7/31	US20070076083
US	29/380087	2010/11/30	2012/08/21	D665841	2026/08/21	
US	11/241088	2005/9/30	2008/5/6	7367640	2026/9/1	US20070076032
US	11/171943	2005/6/30	2008/10/7	7431279	2026/9/11	US20070002116
US	29/380086	2010/11/30	2012/09/18	D667491	2026/09/18	
US	11/386174	2006/3/22	2010/4/6	7690115	2026/10/30	US20060213060
US	11/548346	2006/10/11	2009/10/20	7604315	2026/12/4	US20080088660
US	11/216811	2005/8/31	2008/6/10	7384115	2026/12/8	US20070046711
US	11/464312	2006/8/14	2011/4/12	7922280	2026/12/10	US20060284921
US	11/323433	2005/12/30	2008/10/28	7441869	2027/1/7	US20070153055
US	11/322868	2005/12/30	2008/7/22	7401898	2027/1/14	US20070153054
US	11/303274	2005/12/16	2008/7/15	7399064	2027/1/15	US20070139478
US	10/882728	2004/6/30	2010/3/9	7673970	2027/4/6	US20060001700
US	11/365193	2006/3/1	2009/10/13	7600850	2027/4/12	US20070206067
US	11/361732	2006/2/24	2010/2/2	7654637	2027/7/13	US20070076060
US	10/940917	2004/9/14	2010/8/3	7767103	2027/7/19	US20060054591
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US	12/335914	2008/12/16	2012/5/8	8173031	2027/11/16	US20090155729
US	11/954929	2007/12/12	2009/5/12	7531047	2027/12/12	
US	14/031625	2013/9/19	2014/3/25	8678542	2027/12/14	US20140015877

Country	Application number	Filing date	Registration date	Registration number	Expiration date	Publication Number
US	11/459392	2006/7/24	2010/5/11	7712986	2027/12/27	US20080038037
US	12/338128	2008/12/18	2010/2/16	7661784	2028/1/30	US20090096824
US	11/759260	2007/6/7	2009/11/10	7614715	2028/2/27	US20080303853
US	11/241220	2005/9/30	2010/8/31	7784919	2028/3/21	US20070076058
US	11/329760	2006/1/11	2010/5/18	7717634	2028/4/11	
US	11/095956	2005/3/31	2010/6/15	7735965	2028/6/24	US20060218789
US	11/734284	2007/4/12	2010/1/5	7641313	2028/6/25	US20080252670
US	11/737261	2007/4/19	2010/2/16	7661782	2028/8/1	US20080259105
US	11/148610	2005/6/9	2010/11/30	7842347	2028/8/9	US20060279619
US	11/563832	2006/11/28	2010/3/23	7682005	2028/8/19	US20080122910
US	11/419040	2006/5/18	2011/3/15	7905572	2028/10/6	US20070268344
US	11/734283	2007/4/12	2010/6/15	7735952	2028/10/7	US20080252692
US	11/960838	2007/12/20	2010/4/6	7690752	2028/10/13	US20090160893
US	12/770897	2010/4/30	2013/7/23	8491112	2029/1/2	US20100238233
US	12/690955	2010/2/16	2015/3/3	8968527	2029/1/26	US20110094102
US	12/186578	2008/8/6	2010/11/30	7841687	2029/2/3	US20100033519
US	12/346922	2008/12/31	2011/7/12	7976115	2029/4/21	US20100165029
US	11/752318	2007/5/23	2010/8/3	7766470	2029/4/29	US20080291253
US	13/411777	2012/3/5	2013/10/22	8562108	2029/6/25	US20120162297
US	12/337395	2008/12/17	2011/7/12	7977398	2029/6/30	US20100152316
US	11/958876	2007/12/18	2011/4/12	7922297	2029/7/17	US20090153622
US	11/692461	2007/3/28	2011/4/5	7918550	2029/9/4	US20080239032
US	11/760961	2007/6/11	2011/8/9	7992952	2029/10/7	US20080303849
US	12/165672	2008/7/1	2011/8/9	7992965	2029/11/30	US20100002052
US	12/126406	2008/5/23	2013/1/8	8349211	2030/1/2	US20090288580
US	12/018357	2008/1/23	2011/6/7	7954926	2030/1/15	US20090185003
US	12/437631	2009/5/8	2012/5/8	8172378	2030/3/12	US20100285219
US	14/098325	2013/12/5	2015/9/29	9144969	2030/5/27	US20140092171
US	14/869583	2015/9/29	2017/7/18	9707758	2030/5/27	US20160016406
US	11/691701	2007/3/27	2011/10/18	8038273	2030/6/26	US20080239031
US	12/469085	2009/5/20	2012/7/3	8210629	2030/7/11	US20100295882
US	12/504708	2009/7/17	2012/6/5	8192000	2030/8/11	US20110012964
US	12/503149	2009/7/15	2012/12/11	8328920	2030/8/24	US20110014376

Country	Application number	Filing date	Registration date	Registration number	Expiration date	Publication Number
US	12/503137	2009/7/15	2012/9/4	8256885	2030/8/24	US20110012968
US	12/491892	2009/6/25	2012/9/4	8256875	2030/8/28	US20100328373
US	12/410625	2009/3/25	2012/7/3	8210631	2030/9/11	US20100245430
US	12/337436	2008/12/17	2012/6/5	8191987	2030/11/4	US20100149272
US	12/504757	2009/7/17	2012/9/4	8256880	2030/11/10	US20110012946
US	11/867205	2007/10/4	2012/2/7	8109608	2030/11/20	US20090091600
US	12/345972	2008/12/30	2012/5/8	8172370	2030/11/28	US20100165055
US	14/817036	2015/8/3	2017/1/24	9550364	2030/12/31	US20150336389
US	12/624078	2009/11/23	2012/7/3	8210660	2031/1/18	US20110122194
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US	12/729301	2010/3/23	2012/9/18	8270024	2031/3/7	US20110235065
US	11/839671	2007/8/16	2014/2/25	8659158	2031/4/2	US20080085369
US	16/139943	2018/9/24	2020/5/12	10647119	2031/4/29	US20190030889
US	12/788462	2010/5/27	2014/1/7	8622524	2031/5/2	US20110292124
US	12/847494	2010/7/30	2013/3/12	8394714	2031/5/11	US20120026234
US	14/828018	2015/8/17	2018/2/20	9895899	2031/5/31	US20150352856
US	14/852866	2015/9/14	2018/3/20	9919534	2031/5/31	US20150375516
US	12/344706	2008/12/29	2013/2/5	8366245	2031/7/7	US20100165054
US	12/982976	2010/12/31	2015/8/4	9096067	2031/8/20	US20120169814
US	12/260318	2008/10/29	2012/10/23	8292411	2031/8/24	US20100103230
US	13/149154	2011/5/31	2015/8/18	9108423	2031/9/22	US20120306973
US	13/149169	2011/5/31	2015/9/15	9132656	2031/9/22	US20120306974
US	13/036802	2011/2/28	2013/7/23	8491111	2031/10/13	US20120218356
US	13/046845	2011/3/14	2014/1/28	8636340	2031/11/4	US20120236076
US	13/191558	2011/7/27	2013/12/17	8608291	2031/11/29	US20130027477
US	13/168063	2011/6/24	2014/7/22	8785524	2031/12/13	US20110319513
US	13/041793	2011/3/7	2013/7/23	8491095	2032/3/14	US20120229569
US	13/425695	2012/3/21	2015/8/4	9096068	2032/3/21	US20130250012
US	14/792096	2015/7/6	2018/1/30	9878550	2032/3/21	US20150306881
US	13/350155	2012/1/13	2014/5/20	8728715	2032/3/21	US20130183450
US	13/433330	2012/3/29	2013/11/26	8592503	2032/6/8	US20130261219
US	13/468470	2012/7/25	2015/2/17	8956450	2032/7/25	US20140026783
US	13/112278	2011/5/20	2014/11/18	8888242	2032/8/10	US20120293584

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US	13/417657	2012/3/12	2014/9/2	8820904	2032/11/13	US20130233418
US	14/427267	2013/9/12	2017/4/25	9630419	2033/9/12	US20150224784
US	15/484358	2017/4/11	2018/2/27	9902166	2033/9/12	US20170225484
US	13/457640	2012/4/27	2015/11/3	9174409	2034/1/8	US20130288005
US	14/781483	2014/2/17	2017/10/24	9796549	2034/2/17	US20160052739
US	15/008149	2016/1/27	2016/6/28	9375929	2034/2/25	US20160136956
US	15/179518	2016/6/10	2017/2/21	9573373	2034/2/25	US20160279941
US	15/416671	2017/1/26	2017/10/3	9776403	2034/2/25	US20170144440
US	14/189802	2014/2/25	2016/3/8	9278524	2034/3/9	US20150239245
US	13/097566	2011/4/29	2015/9/15	9132639	2034/3/11	US20120273594
US	13/097549	2011/4/29	2016/8/2	9403365	2034/4/30	US20120273597
US	14/189891	2014/2/25	2019/4/16	10259218	2034/5/4	US20150239241
US	14/292080	2014/5/30	2017/1/3	9533508	2034/5/30	US20150343788
US	15/383523	2016/12/19	2018/4/17	9944086	2034/5/30	US20170096012
US	15/209456	2016/7/13	2017/12/26	9849677	2034/5/30	US20160318305
US	14/303047	2014/6/12	2017/7/11	9701119	2034/6/12	US20150360466
US	14/292319	2014/5/30	2016/8/9	9409399	2034/6/13	US20150343784
US	14/326310	2014/7/8	2015/9/15	9132654	2034/7/8	
US	14/453442	2014/8/6	2015/8/18	9108448	2034/8/6	
US	14/472297	2014/8/28	2016/9/6	9434165	2034/8/28	US20160059560
US	15/233769	2016/8/10	2017/10/31	9802404	2034/8/28	US20160347062
US	14/472307	2014/8/28	2016/5/10	9333748	2034/8/28	US20160059561
US	15/372040	2016/12/7	2017/7/11	9701111	2034/8/28	US20170087824
US	14/485262	2014/9/12	2017/4/18	9623667	2034/9/12	US20160075142
US	16/423659	2019/5/28	2020/12/15	10864740	2034/9/12	US20190275800
US	17/734500	2022/5/2	2023/6/13	11673397	2034/9/12	US20220258480
US	18/308989	2023/4/28	2024/4/16	11958296	2034/9/12	US20230256747
US	14/516433	2014/10/16	2016/4/12	9308737	2034/10/16	US20160107450
US	15/406162	2017/1/13	2018/4/10	9937723	2034/10/16	US20170165974
US	14/500839	2014/9/29	2017/12/5	9833991	2034/10/17	US20160089885
US	14/519921	2014/10/21	2017/6/20	9682567	2034/10/21	US20160107449
US	15/608483	2017/5/30	2018/7/10	10016985	2034/10/21	US20170259578
US	17/096155	2020/11/12	2022/7/12	11383522	2034/11/12	US20210060962

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US	14/568776	2014/12/12	2016/6/14	9365044	2034/12/12	US20160167389
US	15/153520	2016/5/12	2017/4/25	9630416	2034/12/12	US20160257125
US	15/485744	2017/4/12	2017/12/19	9844940	2034/12/12	US20170217170
US	15/380534	2016/12/15	2017/11/14	9815294	2035/1/29	US20170096013
US	15/478887	2017/4/4	2019/7/16	10350898	2035/2/13	US20170203576
US	14/672688	2015/3/30	2017/3/7	9586399	2035/3/30	US20160288501
US	15/450294	2017/3/6	2018/1/30	9878553	2035/3/30	US20170173954
US	14/672662	2015/3/30	2018/2/13	9889651	2035/3/30	US20160288504
US	14/672672	2015/3/30	2017/7/11	9701126	2035/3/30	US20160288497
US	14/683699	2015/4/10	2016/11/15	9493002	2035/4/10	US20160297198
US	15/292735	2016/10/13	2018/10/16	10099477	2035/4/10	US20170028724
US	16/101582	2018/8/13	2020/7/21	10717279	2035/4/10	US20180345667
US	15/135370	2016/4/21	2017/6/13	9676949	2035/5/22	US20160340528
US	14/719595	2015/5/22	2016/5/24	9346967	2035/5/22	
US	15/397090	2017/1/3	2019/6/11	10315434	2035/10/14	US20170113456
US	16/400142	2019/5/1	2020/12/8	10857807	2035/10/14	US20190255860
US	14/882947	2015/10/14	2017/2/14	9566799	2035/10/14	
US	14/925738	2015/10/28	2017/5/23	9656464	2035/10/28	US20170120583
US	15/589515	2017/5/8	2017/11/14	9815278	2035/10/28	US20170239943
US	14/940191	2015/11/13	2017/7/4	9694576	2035/11/13	US20170136766
US	14/943713	2015/11/17	2017/5/23	9659241	2035/11/17	US20170140255
US	16/112830	2018/8/27	2021/7/27	11071700	2035/11/17	US20180360711
US	14/947373	2015/11/20	2017/12/5	9834017	2035/11/20	US20170144461
US	14/963581	2015/12/9	2017/9/12	9757955	2035/12/9	US20170165990
US	15/132387	2016/4/19	2017/11/28	9830113	2036/4/19	US20170300273
US	15/165039	2016/5/26	2017/12/5	9833998	2036/5/26	US20170341400
US	15/183666	2016/6/15	2017/8/29	9744771	2036/6/15	
US	15/183693	2016/6/15	2017/7/18	9707767	2036/6/15	
US	15/239113	2016/8/17	2018/10/23	10105955	2036/6/15	US20180050542
US	15/183705	2016/6/15	2017/9/5	9751315	2036/6/15	
US	15/183722	2016/6/15	2017/9/5	9751316	2036/6/15	
US	15/183736	2016/6/15	2019/2/19	10207510	2036/6/15	US20170361617
US	15/187871	2016/6/21	2017/12/19	9844937	2036/6/21	US20170361609

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US	15/205724	2016/7/8	2017/10/17	9789683	2036/7/8	US20170008277
US	15/205587	2016/7/8	2018/1/30	9878894	2036/7/8	US20180009649
US	14/951836	2015/11/25	2017/12/26	9850891	2036/7/20	US20170146005
US	15/216104	2016/7/21	2018/3/6	9908335	2036/7/21	US20180022099
US	15/206314	2016/7/11	2018/2/27	9902148	2036/7/25	US20170008275
US	15/225982	2016/8/2	2017/9/19	9764544	2036/8/2	
US	16/136632	2018/9/20	2021/2/9	10913278	2036/8/17	US20190016142
US	15/256065	2016/9/2	2017/6/27	9688074	2036/9/2	
US	15/278369	2016/9/28	2018/4/3	9931851	2036/9/28	US20180086083
US	15/094107	2016/4/8	2019/2/19	10206426	2036/9/30	US20170290369
US	15/284574	2016/10/4	2018/5/1	9956783	2036/10/4	US20180093513
US	15/292189	2016/10/13	2018/7/31	10035355	2036/10/13	US20180104956
US	15/295335	2016/10/17	2018/1/2	9855566	2036/10/17	
US	15/297615	2016/10/19	2018/5/8	9961940	2036/10/19	US20170208864
US	15/336863	2016/10/28	2018/11/20	10130122	2036/10/28	US20180116281
US	15/350168	2016/11/14	2018/5/15	9968136	2036/11/14	US20180132527
US	14/966194	2015/12/11	2018/6/5	9989049	2036/11/17	US20170167481
US	15/369961	2016/12/6	2018/6/12	9993027	2036/12/6	US20180153215
US	15/371632	2016/12/7	2018/6/5	9987644	2036/12/7	US20180154385
US	15/373243	2016/12/8	2018/8/28	10059113	2036/12/8	US20180162129
US	15/373635	2016/12/9	2018/2/27	9902158	2036/12/9	
US	15/373684	2016/12/9	2018/2/13	9889670	2036/12/9	
US	15/388409	2016/12/22	2018/5/8	9962948	2036/12/22	
US	15/373123	2016/12/8	2018/11/13	10124593	2036/12/27	US20180162128
US	15/342365	2016/11/3	2018/10/30	10112404	2037/2/17	US20180117921
US	15/435983	2017/2/17	2018/4/10	9937725	2037/2/17	
US	14/987978	2016/1/5	2019/2/19	10208739	2037/3/13	US20170191473
US	14/976036	2015/12/21	2019/8/13	10378526	2037/3/22	US20170175722
US	14/976053	2015/12/21	2019/7/2	10334879	2037/4/22	US20170172206
US	15/193476	2016/6/27	2019/7/2	10336081	2037/4/25	US20170368831
US	14/976067	2015/12/21	2019/7/9	10344747	2037/4/29	US20170173579
US	15/643552	2017/7/7	2020/1/7	10524510	2037/7/7	US20190008205
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US	15/650001	2017/7/14	2018/10/23	10108384	2037/7/14	
US	16/267425	2019/2/5	2020/1/7	10525716	2037/7/14	
US	16/124783	2018/9/7	2019/4/9	10255014	2037/7/14	US20190018634
US	15/682502	2017/8/21	2018/7/24	10031415	2037/8/21	
US	15/175116	2016/6/7	2019/10/1	10429810	2037/9/5	US20170351235
US	15/149664	2016/5/9	2019/12/24	10512921	2037/9/28	US20170320087
US	15/720578	2017/9/29	2018/10/30	10112790	2037/9/29	US20180093840
US	15/726430	2017/10/6	2019/3/5	10223043	2037/10/6	US20180101336
US	15/807686	2017/11/9	2019/5/14	10289592	2037/11/9	US20190138478
US	15/810843	2017/11/13	2020/3/31	10604363	2037/11/13	US20180170694
US	15/358525	2016/11/22	2020/4/7	10609957	2037/12/29	US20180140012
US	15/682485	2017/8/21	2020/3/24	10599034	2037/12/29	US20190056660
US	15/973690	2018/5/8	2019/8/20	10384458	2038/5/8	
US	16/507131	2019/7/10	2020/10/27	10814638	2038/5/8	US20190344573
US	16/285982	2019/2/26	2020/6/23	10688793	2039/2/26	
US	17/047954	2020/10/15	2022/3/8	11270453	2039/5/9	US20210158559
US	17/049769	2020/10/22	2022/3/1	11260663	2039/5/29	US20210235841
US	17/052322	2020/11/2	2022/10/4	11458752	2039/6/20	US20210362526
US	17/051255	2020/10/28	2022/5/17	11331934	2039/7/30	US20210229464
US	16/547538	2019/8/21	2020/12/29	10875324	2039/8/21	US20200062004
US	17/820370	2022/8/17	2024/3/19	11933704	2039/9/1	US20220397496
US	15/883132	2018/1/30	2022/3/22	11279839	2039/9/15	US20190233669
US	16/656588	2019/10/18	2021/5/18	11007777	2039/10/18	US20200207080
US	16/505829	2019/7/9	2022/5/24	11340529	2039/12/23	US20210011382
US	16/741812	2020/1/14	2021/4/27	10987935	2040/1/14	
US	17/196136	2021/3/9	2022/9/6	11433681	2040/1/14	US20210213745
US	18/137776	2023/4/21	2024/5/14	11980889	2040/3/6	US20230249190
US	16/416352	2019/5/20	2022/5/17	11331660	2040/4/28	US20200215531
US	16/875232	2020/5/15	2021/8/17	11090938	2040/5/15	
US	16/937600	2020/7/24	2022/1/4	11216231	2040/7/24	US20210064316
US	17/494849	2021/10/6	2023/4/4	11620096	2040/7/24	US20220027108
US	17/035761	2020/9/29	2023/2/21	11588950	2040/9/29	US20210160390
US	17/090898	2020/11/6	2022/4/19	11305528	2040/11/12	US20210187939

Country	Application number	Filing date	Registration date	Registration number	Expiration date	Publication Number
US	17/063942	2020/10/6	2023/2/14	11577513	2040/12/30	US20220105724
US	16/549378	2019/8/23	2022/7/19	11390098	2041/1/3	US20200060407
US	16/558141	2019/9/1	2022/10/18	11474007	2041/1/12	US20200217763
US	16/668239	2019/10/30	2022/10/18	11471879	2041/1/19	US20200215532
US	16/286060	2019/2/26	2022/6/28	11369781	2041/4/5	US20200269027
US	17/237312	2021/4/22	2023/5/9	11642887	2041/4/22	US20220339933
US	17/222991	2021/4/5	2023/4/25	11633962	2041/4/27	US20210331489
US	16/811778	2020/3/6	2023/6/6	11666918	2041/5/7	US20210276015
US	17/187745	2021/2/27	2023/4/4	11618263	2041/5/23	US20220274417
US	17/225215	2021/4/8	2023/5/9	11642886	2041/5/26	US20220324227
US	16/786142	2020/2/10	2024/1/2	11860180	2041/6/8	US20210247413
US	17/248642	2021/2/1	2023/2/7	11571896	2041/7/22	US20220242124
US	17/152845	2021/1/20	2023/2/14	11577250	2041/7/24	US20220226828
US	17/152842	2021/1/20	2023/2/7	11571691	2041/9/16	US20220226806
US	17/192294	2021/3/4	2023/9/5	11746005	2041/11/18	US20220281740
US	17/246712	2021/5/2	2024/3/12	11925753	2041/12/2	US20210346622
US	17/205016	2021/3/18	2024/2/13	11896971	2041/12/23	US20220297439
US	17/454130	2021/11/9	2024/1/9	11865843	2042/1/7	US20230143469
US	17/447478	2021/9/13	2023/6/27	11686696	2042/1/18	US20230077341
US	17/538384	2021/11/30	2023/11/14	11815812	2042/2/24	US20230168580
US	16/724982	2019/12/23	2023/9/26	11768215	2042/3/2	US20200217868
US	17/248996	2021/2/17	2023/10/31	11801370	2042/3/8	US20220257914
US	17/304487	2021/6/22	2023/8/22	11731798	2042/3/22	US20220402645
US	17/193731	2021/3/5	2024/3/12	11926157	2042/4/7	US20220281224
US	17/705379	2022/3/27	2024/6/25	12017460	2042/5/5	US20220339944
US	17/699280	2022/3/21	2023/11/21	11820140	2042/5/6	US20230311496
US	17/584327	2022/1/25	2023/10/10	11785698	2042/5/9	US20220256679
US	17/745886	2022/5/17	2023/10/17	11787187	2042/6/8	US20220396075
US	17/809312	2022/6/28	2024/1/2	11858268	2042/6/28	US20230415480
US	17/695807	2022/3/15	2024/3/5	11919312	2042/6/30	US20220332120
US	17/818961	2022/8/10	2024/7/2	12023935	2042/8/10	US20240051305
US	17/805499	2022/6/6	2024/3/19	11931758	2042/8/13	US20230390797
US	17/206344	2021/3/19	2024/4/16	11958292	2042/9/12	US20220297428

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US	17/205280	2021/3/18	2024/3/12	11925749	2042/9/15	US20220296828
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EP	05791386.5	2005/8/25	2012/01/11	1799461	2025/08/25	EP1799461
JP	2013-076356	2013/4/1	2017/08/02	6171497	2033/04/01	JP2014201374
CN	201380039187.X	2013/7/23	2017/11/14	104583346	2033/07/23	CN104583346
EP	13795565.4	2013/7/23	2020/07/22	2855607	2033/07/23	EP2855607
CN	201380047465.6	2013/9/12	2017/07/14	104781077	2033/09/12	CN104781077
EP	13836210.8	2013/9/12	2017/03/08	2892725	2033/09/12	EP2892725
EP	16207503.0	2013/9/12	2020/06/03	3173236	2033/09/12	EP3173236
JP	2015-530519	2013/9/12	2018/03/14	6292234	2033/09/12	JP2015534513
JP	20141-47036	2014/7/17	2018/10/31	6413421	2034/07/17	JP2016024270
CN	201580028995.5	2015/5/21	2018/11/02	106414082	2035/05/21	CN106414082
CN	201580028739.6	2015/5/21	2019/01/08	106470844	2035/05/21	CN106470844
CN	201811210448.0	2015/5/21	2020/05/19	109591462	2035/05/21	CN109591462
CN	201910102925.X	2015/5/21	2020/11/10	109927418	2035/05/21	CN109927418
EP	15799335.3	2015/5/21	2019/01/09	3148810	2035/05/21	EP3148810
EP	15798862.7	2015/5/21	2019/09/18	3148813	2035/05/21	EP3148813
JP	2017-515288	2015/5/21	2020/03/11	6662379	2035/05/21	JP2017516692
JP	2017-515289	2015/5/21	2019/10/23	6593439	2035/05/21	JP2017516693
CN	201580036839.3	2015/7/8	2018/06/01	106660371	2035/07/08	CN106660371
EP	15819035.5	2015/7/8	2019/05/15	3166796	2035/07/08	EP3166796
JP	2017-501047	2015/7/8	2019/07/24	6547824	2035/07/08	JP2017521286
EP	15177015.3	2015/7/16	2019/04/03	2975448	2035/07/16	EP2975448
CN	201580042284.3	2015/8/4	2019/04/09	106604825	2035/08/04	CN106604825
EP	15829421.5	2015/8/4	2020/05/27	3194173	2035/08/04	EP3194173
JP	2017-505875	2015/8/4	2019/11/27	6610657	2035/08/04	JP2017523065
CN	201580046666.3	2015/8/21	2018/11/20	106660366	2035/08/21	CN106660366
CN	201811267626.3	2015/8/21	2020/10/16	109624509	2035/08/21	CN109624509
EP	15834887.0	2015/8/21	2021/11/17	3186084	2035/08/21	EP3186084
JP	2017-530459	2015/8/21	2020/04/08	6677253	2035/08/21	JP2017525603
CN	201580046769.X	2015/8/24	2018/10/26	106794697	2035/08/24	CN106794697
CN	201811137719.4	2015/8/24	2020/07/03	109318595	2035/08/24	CN109318595
EP	15836700.3	2015/8/24	2019/10/09	3186085	2035/08/24	EP3186085

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JP	2017-530460	2015/8/24	2022/05/16	7067928	2035/08/24	JP2017529267
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CN	201811204146.2	2015/9/8	2020/07/10	109278417	2035/09/08	CN109278417
EP	15839556.6	2015/9/8	2020/07/08	3191309	2035/09/08	EP3191309
JP	2017-513578	2015/9/8	2019/09/25	6579193	2035/09/08	JP2017526562
CN	201580052370.2	2015/9/17	2018/11/09	107073939	2035/09/17	CN107073939
CN	201811230416.7	2015/9/17	2020/06/23	109278410	2035/09/17	CN109278410
EP	15847996.4	2015/9/17	2021/01/27	3201002	2035/09/17	EP3201002
JP	2017-516979	2015/9/17	2020/02/05	6642569	2035/09/17	JP2017528352
CN	201580056902.X	2015/10/16	2019/11/08	107073966	2035/10/16	CN107073966
EP	15852260.7	2015/10/16	2021/07/14	3209500	2035/10/16	EP3209500
JP	2017-519019	2015/10/16	2020/01/08	6627870	2035/10/16	JP2017530884
JP	2017-520553	2015/10/16	2019/10/02	6583406	2035/10/16	JP2017531580
EP	20187957.4	2015/11/18	2023/01/04	3747658	2035/11/18	EP3747658
EP	15879824.9	2015/11/18	2020/19/08	3250384	2035/11/18	EP3250384
CN	201580067065.0	2015/12/7	2019/08/09	107000442	2035/12/07	CN107000442
CN	201910624454.9	2015/12/7	2021/01/19	110254052	2035/12/07	CN110254052
EP	15868529.7	2015/12/7	2020/09/02	3230068	2035/12/07	EP3230068
JP	2017-524486	2015/12/7	2020/01/22	6635114	2035/12/07	JP2017537002
EP	16799504.2	2016/3/28	2021/02/10	3298090	2036/03/28	EP3298090
JP	2017-559135	2016/3/28	2020/11/18	6787341	2036/03/28	JP2018522956
CN	201680016989.2	2016/3/30	2019/06/04	107428167	2036/03/30	CN107428167
CN	201910384237.7	2016/3/30	2020/09/25	110126465	2036/03/30	CN110126465
EP	16776278.0	2016/3/30	2021/05/12	3280595	2036/03/30	EP3280595
EP	21158352.1	2016/3/30	2023/08/23	3842237	2036/03/30	EP3842237
JP	2021-143735	2021/9/3	2022/11/16	7173247	2036/03/30	JP2021183426
JP	2017-547180	2016/3/30	2020/08/19	6741015	2036/03/30	JP2018510793
JP	2020-124977	2020/7/22	2021/10/13	6947257	2036/03/30	JP2020172113
EP	16178389.9	2016/7/7	2020/01/01	3121019	2036/07/07	EP3121019
CN	201610534827.X	2016/7/8	2018/05/08	106335281	2036/07/08	CN106335281
JP	2016-195055	2016/9/30	2020/09/16	6756222	2036/09/30	JP2018058655
JP	2016-199087	2016/10/7	2020/11/11	6784128	2036/10/07	JP2018058312
CN	201680057507.8	2016/10/11	2019/09/03	108136792	2036/10/11	CN108136792

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CN	201910710508.3	2016/10/11	2021/05/28	110303774	2036/10/11	CN110303774
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JP	2018-517550	2016/10/11	2021/06/02	6881443	2036/10/11	JP2018530461
CN	201680059788.0	2016/10/13	2020/02/07	108136775	2036/10/13	CN108136775
EP	16788237.2	2016/10/13	2021/02/24	3374185	2036/10/13	EP3374185
JP	2018-519924	2016/10/13	2020/12/09	6798553	2036/10/13	JP2018535119
CN	201680060394.7	2016/10/25	2019/11/08	108136774	2036/10/25	CN108136774
EP	16859775.5	2016/10/25	2020/08/05	3368320	2036/10/25	EP3368320
JP	2018-517229	2016/10/25	2020/09/02	6750675	2036/10/25	JP2018535848
CN	201680065206.X	2016/11/17	2021/05/28	108271350	2036/11/17	CN108271350
CN	201680065342.9	2016/11/17	2020/08/25	108349244	2036/11/17	CN108349244
EP	16866374.8	2016/11/17	2021/04/07	3377028	2036/11/17	EP3377028
EP	16866376.3	2016/11/17	2023/02/15	3377323	2036/11/17	EP3377323
JP	2018-518674	2016/11/17	2021/09/08	6933208	2036/11/17	JP2018533563
JP	2018-518530	2016/11/17	2020/08/19	6743888	2036/11/17	JP2018534173
CN	201680066371.7	2016/11/24	2019/08/27	108271405	2036/11/24	CN108271405
EP	16868605.3	2016/11/24	2020/01/08	3380732	2036/11/24	EP3380732
JP	2018-517636	2016/11/24	2020/10/14	6766871	2036/11/24	JP2018536793
CN	201680071501.6	2016/12/6	2020/07/07	108367571	2036/12/06	CN108367571
CN	201680071571.1	2016/12/6	2021/03/12	108368857	2036/12/06	CN108368857
EP	16872987.9	2016/12/6	2023/02/08	3386760	2036/12/06	EP3386760
EP	22204309.3	2016/12/6				EP4147875
EP	16872988.7	2016/12/6	2022/04/27	3387264	2036/12/06	EP3387264
EP	22152139.6	2016/12/6				EP4006357
JP	2018-519776	2016/12/6	2020/10/21	6773113	2036/12/06	JP2018536795
JP	2018-519774	2016/12/6	2020/09/02	6750677	2036/12/06	JP2019501791
JP	2016-244792	2016/12/16	2021/02/24	6834452	2036/12/16	JP2018095470
CN	201680066315.3	2016/12/19	2020/03/24	108350870	2036/12/19	CN108350870
EP	16878603.6	2016/12/19	2021/11/24	3394444	2036/12/19	EP3394444
JP	2018-517906	2016/12/19	2020/06/17	6711399	2036/12/19	JP2018537608
CN	201680066615.1	2016/12/26	2019/07/23	108291533	2036/12/26	CN108291533
EP	16828986.6	2016/12/26	2020/04/08	3400388	2036/12/26	EP3400388
JP	2018-523409	2016/12/26	2020/09/09	6753466	2036/12/26	JP2019500534

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CN	201780004945.2	2017/1/17	2021/12/28	108430554	2037/01/17	CN108430554
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JP	2018-533131	2017/1/17	2021/12/22	6984603	2037/01/17	JP2019508021
EP	17165177.1	2017/4/6	2021/07/21	3235534	2037/04/06	EP3235534
CN	201710223512.8	2017/4/7	2020/09/29	107259646	2037/04/07	CN107259646
JP	2017-076883	2017/4/7	2021/06/30	6897251	2037/04/07	JP2017185488
CN	201710251022.9	2017/4/17	2019/11/05	107443936	2037/04/17	CN107443936
JP	2017-081450	2017/4/17	2022/03/23	7039854	2037/04/17	JP2017193174
EP	17166739.7	2017/4/18	2019/03/06	3235649	2037/04/18	EP3235649
EP	17169231.2	2017/5/3	2019/08/14	3246061	2037/05/03	EP3246061
CN	201710315236.8	2017/5/5	2021/06/11	107373756	2037/05/05	CN107373756
JP	2017-092301	2017/5/8	2021/12/15	6981037	2037/05/08	JP2017201980
CN	201710387581.2	2017/5/26	2019/05/28	107433773	2037/05/26	CN107433773
EP	17172985.8	2017/5/26	2020/11/11	3248788	2037/05/26	EP3248788
JP	2017-105030	2017/5/26	2022/01/26	7009781	2037/05/26	JP2017209995
CN	201710546015.1	2017/7/6	2020/02/28	107584884	2037/07/06	CN107584884
EP	17179911.7	2017/7/6	2020/01/29	3266615	2037/07/06	EP3266615
JP	2017-132835	2017/7/6	2021/11/02	6958035	2037/07/06	JP2018001159
EP	17191089.6	2017/9/14	2024/01/03	3301046	2037/09/14	EP3301046
EP	17195202.1	2017/10/6	2019/09/18	3306461	2037/10/06	EP3306461
CN	201710931083.X	2017/10/9	2019/12/31	107879143	2037/10/09	CN107879143
CN	201710930934.9	2017/10/9	2020/11/10	107918532	2037/10/09	CN107918532
EP	17195372.2	2017/10/9	2021/01/13	3308964	2037/10/09	EP3308964
EP	17195399.5	2017/10/9	2021/01/13	3312011	2037/10/09	EP3312011
CN	201710945055.3	2017/10/11	2019/07/16	107933098	2037/10/11	CN107933098
CN	201710945916.8	2017/10/11	2019/12/24	107953672	2037/10/11	CN107953672
JP	2017-197993	2017/10/11	2022/10/05	7147148	2037/10/11	JP2018062389
JP	2017-198274	2017/10/12	2022/01/20	7003556	2037/10/12	JP2018065381
EP	17200627.2	2017/11/8	2020/01/08	3336026	2037/11/08	EP3336026
JP	2017-221408	2017/11/17	2022/03/15	7035472	2037/11/17	JP2018083074
EP	17202585.0	2017/11/20	2020/01/29	3323456	2037/11/20	EP3323456
CN	201711247234.6	2017/11/30	2019/11/26	108177444	2037/11/30	CN108177444
CN	201711245655.5	2017/11/30	2020/03/13	108215511	2037/11/30	CN108215511

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JP	2017-231725	2017/12/1	2022/01/26	7009960	2037/12/01	JP2018088918
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EP	17205220.1	2017/12/4	2020/09/09	3332970	2037/12/04	EP3332970
EP	17205237.5	2017/12/4	2019/02/27	3332971	2037/12/04	EP3332971
EP	17205555.0	2017/12/5	2020/08/05	3332657	2037/12/05	EP3332657
EP	17205316.7	2017/12/5	2021/01/13	3332967	2037/12/05	EP3332967
JP	2017-233051	2017/12/5	2022/04/05	7047356	2037/12/05	JP2018094920
CN	201711280881.7	2017/12/6	2019/10/11	108177443	2037/12/06	CN108177443
CN	201711280554.1	2017/12/6	2019/12/31	108215501	2037/12/06	CN108215501
JP	2017-234146	2017/12/6	2023/01/17	7205053	2037/12/06	JP2018096372
JP	2017-234148	2017/12/6	2022/02/16	7020087	2037/12/06	JP2018096373
JP	2017-234150	2017/12/6	2022/03/02	7027854	2037/12/06	JP2018096374
JP	2017-234151	2017/12/6	2022/03/02	7027855	2037/12/06	JP2018096375
EP	17205792.9	2017/12/7	2020/10/14	3332972	2037/12/07	EP3332972
EP	17205911.5	2017/12/7	2020/05/06	3332973	2037/12/07	EP3332973
EP	18155607.7	2018/2/7	2020/04/15	3366478	2038/02/07	EP3366478
JP	2018-023506	2018/2/13	2022/05/31	7077647	2038/02/13	JP2018132062
CN	201810685587.2	2018/6/28	2021/10/01	109201361	2038/06/28	CN109201361
JP	2018-122652	2018/6/28	2022/08/24	7124484	2038/06/28	JP2019016593
EP	18181525.9	2018/7/3	2021/04/07	3425998	2038/07/03	EP3425998
CN	201810749988.X	2018/7/10	2020/06/16	109249705	2038/07/10	CN109249705
CN	202010431099.6	2018/7/10	2021/07/30	111452508	2038/07/10	CN111452508
EP	18182570.4	2018/7/10	2020/08/12	3427959	2038/07/10	EP3427959
EP	20175991.7	2018/7/10	2023/01/11	3722099	2038/07/10	EP3722099
JP	2018-131268	2018/7/11	2022/11/16	7172208	2038/07/11	JP2019018569
EP	18188901.5	2018/8/14	2020/10/28	3446877	2038/08/14	EP3446877
JP	2018-152696	2018/8/14	2023/05/26	7281685	2038/08/14	JP2019087228
JP	2018-153434	2018/8/17	2023/06/07	7288165	2038/08/17	JP2019034554
JP	2018-153451	2018/8/17	2023/01/17	7205107	2038/08/17	JP2019034555
CN	201810952134.1	2018/8/21	2023/04/07	109766283	2038/08/21	CN109766283
JP	2018-155228	2018/8/22	2022/06/21	7087818	2038/08/22	JP2020028406
JP	2018-157892	2018/8/27	2022/09/06	7131201	2038/08/27	JP2020031670
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JP	2019-010971	2019/1/25	2023/04/18	7259352	2039/01/25	JP2019131801
JP	2019-060593	2019/3/27	2023/01/31	7215288	2039/03/27	JP2019195995
CN	201910255760.X	2019/4/1	2021/08/03	110449305	2039/04/01	CN110449305
CN	202110785797.0	2019/4/1	2022/10/14	113426615	2039/04/01	CN113426615
EP	19166949.8	2019/4/3	2023/08/16	3566874	2039/04/03	EP3566874
CN	201980029628.5	2019/4/16	2022/04/12	112074410	2039/04/16	CN112074410
EP	19888429.8	2019/4/16	2024/07/31	3888917	2039/04/16	EP3888917
JP	2020-557539	2019/4/16	2023/04/18	7259865	2039/04/16	JPWO2020/110340
JP	2020-557543	2019/5/9	2023/09/20	7347443	2039/05/09	JPWO2020/110347
CN	201980026726.3	2019/5/29	2023/04/28	111989009	2039/05/29	CN111989009
CN	201980027445.X	2019/5/29	2023/04/25	112004439	2039/05/29	CN112004439
EP	19888787.9	2019/5/29	2024/07/03	3888488	2039/05/29	EP3888488
JP	2020-557547	2019/5/29	2024/01/17	7415942	2039/05/29	JPWO2020/110352
JP	2019-158006	2019/8/30	2023/09/12	7342530	2039/08/30	JP2021035745
JP	2019-212017	2019/11/25	2023/10/18	7363409	2039/11/25	JP2021084227
JP	2019-229904	2019/12/20	2023/11/29	7388173	2039/12/20	JP2021098274
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EP	19219747.3	2019/12/27	2023/10/04	3677918	2039/12/27	EP3677918
EP	19219756.4	2019/12/27	2023/09/06	3677919	2039/12/27	EP3677919
EP	19219759.8	2019/12/27	2024/02/21	3677920	2039/12/27	EP3677920
EP	19219773.9	2019/12/27	2023/02/22	3677921	2039/12/27	EP3677921
JP	2019-238047	2019/12/27	2024/01/17	7415555	2039/12/27	JP2020122779
JP	2019-238074	2019/12/27	2023/10/18	7363475	2039/12/27	JP2020122780
JP	2019-238094	2019/12/27	2024/01/09	7409081	2039/12/27	JP2020122781
JP	2019-238065	2019/12/27	2023/09/05	7338464	2039/12/27	JP2020126043
JP	2019-238116	2019/12/27	2023/11/15	7380211	2039/12/27	JP2020126044
CN	202010002551.7	2020/1/2	2024/02/13	111413181	2040/01/02	CN111413181
CN	202010002553.6	2020/1/2	2024/02/13	111413182	2040/01/02	CN111413182
CN	202010002554.0	2020/1/2	2024/05/10	111413183	2040/01/02	CN111413183
CN	202010002552.1	2020/1/2	2024/01/09	111413513	2040/01/02	CN111413513
JP	2020-023382	2020/2/14	2024/06/18	7500985	2040/02/14	JP2020138013

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JP	2020-023349	2020/2/14	2024/03/19	7452065	2040/02/14	JP2020138805
CN	202010105104.4	2020/2/20	2022/04/15	111605310	2040/02/20	CN111605310
EP	20158921.5	2020/2/24	2023/11/29	3701986	2040/02/24	EP3701986
JP	2020-076241	2020/4/22	2024/05/16	7484379	2040/04/22	JP2021171972
JP	2020-083475	2020/5/11	2024/07/02	7508852	2040/05/11	JP2021177832
CN	202010616270.0	2020/6/30	2024/06/14	112213921	2040/06/30	CN112213921
EP	20183375.3	2020/7/1	2024/09/18	3763764	2040/07/01	EP3763764
EP	20184708.4	2020/7/8	2023/01/18	3785566	2040/07/08	EP3785566
EP	22210831.8	2020/7/8	2024/10/16	4166034	2040/07/08	EP4166034
CN	202010678624.4	2020/7/15	2022/07/15	112440587	2040/07/15	CN112440587
CN	202011084316.5	2020/10/12	2023/06/27	112829475	2040/10/12	CN112829475
CN	202011213925.6	2020/11/4	2022/07/15	113002196	2040/11/04	CN113002196
EP	20205920.0	2020/11/5	2023/11/22	3825133	2040/11/05	EP3825133
EP	21178694.2	2020/11/5	2023/02/01	3907084	2040/11/05	EP3907084
EP	20206646.0	2020/11/10	2023/03/22	3838606	2040/11/10	EP3838606
EP	20217477.7	2020/12/29	2023/01/04	3851285	2040/12/29	EP3851285
CN	202110003623.4	2021/1/4	2022/08/23	113119594	2041/01/04	CN113119594
CN	202210906907.9	2021/1/4	2024/05/03	115230321	2041/01/04	CN115230321
EP	21154714.6	2021/2/2	2023/11/01	3875277	2041/02/02	EP3875277
CN	202110153633.6	2021/2/4	2022/10/11	113352765	2041/02/04	CN113352765
CN	202211144825.1	2021/2/4	2024/01/19	115384190	2041/02/04	CN115384190
CN	202110353829.X	2021/4/1	2022/07/29	113524905	2041/04/01	CN113524905
EP	21167973.3	2021/4/13	2022/12/14	3900941	2041/04/13	EP3900941
CN	202110474438.3	2021/4/29	2023/03/03	113665242	2041/04/29	CN113665242
EP	21171109.8	2021/4/29	2023/08/30	3909626	2041/04/29	EP3909626
EP	21171416.7	2021/4/30	2023/01/18	3909678	2041/04/30	EP3909678
CN	202111086066.3	2021/9/16	2023/07/07	114379233	2041/09/16	CN114379233
EP	21210967.2	2021/11/29	2024/03/27	4032711	2041/11/29	EP4032711
CN	202111585022.5	2021/12/22	2024/04/12	114801495	2041/12/22	CN114801495
CN	202111612494.5	2021/12/27	2024/03/08	114834156	2041/12/27	CN114834156
EP	21218120.0	2021/12/29	2023/08/30	4035901	2041/12/29	EP4035901
CN	202210048011.1	2022/1/17	2024/07/12	114939228	2042/01/17	CN114939228
EP	22154512.2	2022/2/1	2024/09/18	4046808	2042/02/01	EP4046808

Country	Application number	Filing date	Registration date	Registration number	Expiration date	Publication Number
CN	202210138927.6	2022/2/15	2024/08/16	115008902	2042/02/15	CN115008902
EP	22156787.8	2022/2/15	2024/08/28	4049845	2042/02/15	EP4049845
CN	202210174791.4	2022/2/24	2024/07/16	115105693	2042/02/24	CN115105693
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CN	202210276013.6	2022/3/21	2024/08/16	115195299	2042/03/21	CN115195299
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US	16/886126	2020/05/28	2023/07/25	11708503	2028/11/10	US20200325349
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CN	201680017960.6	2016/03/25	2020/09/01	107530717	2036/03/25	CN107530717
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EP	17183677.8	2017/07/28	2020/04/22	3279280	2037/07/28	EP3279280
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EP	16878602.8	2016/12/19	2022/09/14	3394510	2036/12/19	EP3394510
EP	21210091.1	2021/11/24	2024/02/21	4019133	2041/11/24	EP4019133
EP	22160979.5	2022/03/09	2024/05/22	4059605	2042/03/09	EP4059605
JP	2017-547029	2016/03/25	2020/10/21	6773042	2036/03/25	JP2018514368
JP	2018-517641	2016/12/19	2021/01/06	6806149	2036/12/19	JP2019504269
JP	2017-117608	2017/06/15	2021/08/18	6922459	2037/06/15	JP2017222167

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JP	2017-141169	2017/07/20	2021/11/02	6958057	2037/07/20	JP2018012100
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JP	2018-153433	2018/08/17	2023/05/08	7268302	2038/08/17	JP2019035961
JP	2020-095390	2020/06/01	2024/03/06	7443937	2040/06/01	JP2021186314
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US	63/713252	2024/10/29				
US	17/238178	2021/04/22				US20210369993
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US	18/808057	2024/08/18				
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EP	21196610.6	2021/09/14				EP3981603
EP	18188916.3	2018/08/14				EP3447578
EP	20159137.7	2020/02/24				EP3702046
EP	20185635.8	2015/12/07				EP3741572
EP	21218109.3	2021/12/29				EP4032712
EP	22157899.0	2022/02/22				EP4052912
EP	22157936.0	2022/02/22				EP4052914
EP	22165314.0	2022/03/30				EP4079523
EP	22175035.9	2022/05/24				EP4108463
EP	23169156.9	2016/03/30				EP4227104
EP	23169729.3	2023/04/25				EP4275907
EP	23174236.2	2023/05/19				EP4289627
EP	24150084.2	2021/05/18				EP4322172
CN	201810919939.6	2018/08/14				CN109422236
CN	201810920080.0	2018/08/14				CN109422237
CN	202010000851.1	2020/01/02				CN111413180
CN	202010105230.X	2020/02/20				CN111603639
CN	201980025780.6	2019/05/09				CN111989712
CN	202110035898.6	2021/01/12				CN113246611
CN	202111449134.8	2021/11/30				CN114813263
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CN	202210246806.3	2022/03/14				CN115113480
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CN	202310631834.1	2023/05/31				CN117183579
CN	202310652683.8	2023/06/05				CN117309514
CN	202310872822.8	2023/07/17				CN117584632

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JP	2023-098021	2023/06/14				JP2024179289
JP	2023-080918	2023/05/16				JP2024165077
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JP	2020-212728	2020/12/22				JP2022099005
JP	2021-146890	2021/09/09				JP2023039658
JP	2021-161500	2021/09/30				JP2023051055
JP	2021-162180	2021/09/30				JP2023051473
JP	2021-161187	2021/09/30				JP2023050855
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JP	2022-004494	2022/01/14				JP2022117944
JP	2022-020965	2022/02/15				JP2022125985
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JP	2022-028490	2022/02/25				JP2022135988
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JP	2022-039944	2022/03/15				JP2022145615
JP	2022-041519	2022/03/16				JP2022145634
JP	2022-064426	2022/04/08				JP2022167809
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JP	2023-090649	2023/06/01				JP2023178964
JP	2023-101236	2023/06/20				JP2024004475
JP	2023-127194	2023/08/03				JP2024025704
JP	2021-001632	2021/01/07				JP2021109447
JP	2021-010897	2021/01/27				JP2021126900
JP	2021-023907	2021/02/18				JP2021137801
JP	2021-079266	2021/05/07				JP2021179431
JP	2021-157062	2021/09/27				JP2022061485
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JP	2022-000709	2022/01/05				JP2022111998
JP	2021-017417	2021/02/05				JP2022120493
JP	2021-096257	2021/06/09				JP2022188329
JP	2023-164086	2023/09/27				JP2024012284
JP	2023-080918	2023/05/16				JP2024165077
JP	2022-036765	2022/03/10				JP2022145587
JP	2022-062498	2022/04/04				JP2022161863
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EP	22160661.9	2022/03/08				EP4059551
EP	22165300.9	2022/03/30				EP4070959
CN	202410820198.1	2022/03/29				CN118750699
JP	2022-062511	2022/04/04				JP2022161864
US	18/359063	2023/07/26				US20230364625
US	18/204209	2023/5/31				US20230303867
CN	201810920947.2	2018/8/14				CN109422238
CN	202111598000.2	2021/12/24				CN114849033
CN	202111585015.5	2021/12/22				CN114849032
CN	202310475948.1	2023/4/28				CN117048202
CN	202310297134.3	2023/3/24				CN116889663
CN	202311850590.2	2023/12/29				CN118477705
CN	202410010112.9	2024/1/4				CN118514426

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CN	202410172639.1	2024/2/7				CN118649804
CN	202410482117.1	2024/4/22				CN118883972
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CN	202410460656.5	2024/4/17				CN119001133
CN	202411068948.0	2024/8/6				CN119500429
CN	202411300963	2024/9/18				
CN	202411296520	2024/9/18				
EP	18188828.0	2018/8/14				EP3447579
EP	21151052.4	2021/1/12				EP3862091
EP	22211635.2	2022/12/6				EP4186595
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EP	21218267.9	2021/12/30				EP4039299
EP	22160974.6	2022/3/9				EP4060406
EP	22161235.1	2022/3/10				EP4059606
EP	22187111.4	2022/7/27				EP4147872
EP	23201856.4	2023/10/5				EP4285972
EP	23162584.9	2023/3/17				EP4249122
EP	23164056.6	2023/3/24				EP4252806
EP	23176781.5	2023/6/1				EP4299179
EP	23174706.4	2023/5/23				EP4296062
EP	23185797.0	2023/7/17				EP4321342
EP	23213739.8	2023/12/1				EP4389285
EP	23220732.4	2023/12/29				EP4414074
EP	24150558.5	2024/1/5				EP4417430
EP	24158603.1	2024/2/20				EP4431288
EP	24159363.1	2024/2/23				EP4431296
EP	24193522	2024/8/8				
US	18/505056	2023/11/13				US20240207874
US	18/639974	2024/4/19				US20240367432
US	18/639978	2024/4/19				US20240383252
JP	2020-115337	2020/7/3				JP2021015276
JP	2022-004963	2022/1/17				JP2022119723
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JP	2022-040017	2022/3/15				JP2022145618
JP	2023-048043	2023/3/24				JP2023147250
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JP	2024-009866	2024/1/26				JP2024118433
JP	2024-035685	2024/3/8				JP2024132954
JP	2024-039096	2024/3/13				JP2024132996
JP	2024-135519	2024/8/15				JP2025031614
JP	2024-167855	2024/9/26				
JP	2024-167859	2024/9/26				
US	18/581908	2024/2/20				US20240189522
US	18/171478	2023/2/20				US20240278580