

TABLE S8-35

USPTO patents and patent families granted in mechanical elements, by region, country, or economy: 1998–2018

(Number)

Region, country, or economy	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		
	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families			
World	4,244	8,842	4,555	10,384	4,811	8,717	4,886	7,984	4,943	7,833	4,611	8,916	4,261	9,268	3,753	9,777	4,161	10,237	3,491	10,406	3,280	10,896	3,304	11,143	4,263	11,708	4,435	12,957	5,274	15,404	5,854	15,072	6,307	14,394	6,830	16,001	6,761	19,059	7,527	20,266	7,246	20,036	
North America	2,105	2,329	1,746	1,789	2,319	2,229	1,746	2,282	1,620	2,237	1,746	2,085	1,423	1,956	1,321	1,730	1,059	1,403	1,562	1,208	1,408	806	1,408	922	1,911	1,911	966	2,192	2,544	1,243	2,670	1,208	2,994	1,345	3,012	1,293	3,350	1,386	3,224	1,359			
Canada	79	69	94	92	86	62	92	64	115	71	95	70	94	69	87	54	90	65	78	56	53	52	65	52	80	69	88	48	111	57	111	74	137	73	145	70	153	70	184	73	161	63	
Mexico	4	3	3	1	5	2	5	2	6	3	3	3	3	5	7	5	2	1	4	2	2	3	1	0	2	2	3	1	4	2	8	6	8	4	10	12	10	19	16				
Puerto Rico	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	0	1	0	1	0	0			
United States	2,022	1,665	2,133	1,696	2,226	1,683	2,185	1,553	2,116	1,471	1,986	1,350	1,857	1,247	1,637	1,000	1,863	1,110	1,480	864	1,344	750	1,342	789	1,792	960	1,821	916	2,076	1,045	2,429	1,168	2,523	1,129	2,840	1,271	2,848	1,213	3,152	1,303	3,043	1,280	
All others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Central and South America	12	7	11	6	12	14	12	8	8	13	9	15	10	6	6	14	10	8	7	8	11	6	11	29	7	47	36	17	21	28	14	17	22	27	25	32	25	32	22	38			
Argentina	1	1	3	2	4	3	2	0	0	2	2	0	1	0	2	0	1	1	2	3	1	2	2	0	2	2	1	4	2	0	2	1	3	0	3	1	0	1	1	0			
Brazil	9	3	7	4	10	9	10	9	6	3	10	9	14	9	4	5	7	6	4	3	3	6	4	27	2	43	32	15	25	16	15	25	18	29	22	18	22	18	37				
All others	3	3	1	3	4	3	2	3	2	3	1	1	0	1	1	1	5	3	2	1	2	1	3	2	1	2	3	1	3	2	4	2	3	2	4	1	2	4	3	1			
Europe	1,054	3,091	1,097	3,066	1,269	2,960	1,342	2,789	1,319	2,859	1,157	3,030	1,082	3,510	959	3,162	1,004	3,191	841	2,903	836	2,882	819	2,876	1,082	2,738	1,144	2,473	1,419	3,036	1,556	2,779	1,680	2,965	1,773	3,171	1,746	3,257	1,926	3,679	1,799	3,658	
EU	997	2,369	1,056	2,433	1,209	2,392	1,282	2,232	1,263	2,201	1,105	2,176	1,046	2,499	927	2,422	963	2,327	810	2,119	807	2,098	789	2,047	1,039	1,974	1,084	1,866	1,359	2,245	1,478	2,057	1,592	2,178	1,678	2,346	1,672	2,443	1,834	2,778	1,711	2,662	
Austria	22	54	20	48	22	51	28	54	28	49	27	58	28	39	17	39	28	82	14	42	17	56	22	58	32	69	29	75	41	87	46	88	58	61	52	79	45	68	85	62	102		
Belgium	12	11	12	5	12	6	10	9	11	12	9	10	14	18	16	21	18	12	14	9	17	9	12	12	24	13	16	9	16	18	13	16	12	23	11	26	12	37	17	27			
Denmark	15	10	13	13	12	22	14	17	12	25	11	14	14	11	16	19	16	12	16	10	10	19	4	17	17	17	16	13	21	14	26	13	26	20	30	18	31	26	28	29			
Finland	10	29	11	24	13	23	19	21	14	20	13	29	13	25	7	38	9	21	5	17	4	32	3	23	11	22	3	23	7	23	5	23	11	27	19	39	24	32	19	29			
France	160	560	148	492	157	509	159	542	154	470	137	451	115	482	107	375	111	516	80	521	83	554	87	565	117	461	124	379	161	532	154	477	204	540	243	644	209	673	259	668	226	706	
Germany	512	967	598	920	677	900	743	940	707	947	651	1,014	605	991	554	1,209	561	1,200	471	1,037	491	948	463	907	746	856	637	746	897	869	604	897	897	869	604	897	897	1,010	859	936	1,009	811	1,061
Hungary	0	7	0	4	1	6	3	7	2	11	2	4	1	2	1	10	3	4	1	5	0	5	2	2	3	4	2	5	4	2	8	6	8	2	8	1	6	3	7	3	6		
Ireland	0	4	2	3	1	1	3	1	3	0	2	1	3	0	1	0	1	0	1	0	1	0	1	1	1	3	3	4	3	4	3	4	3	4	3	8	8	7	3	5	1		
Italy	41	224	45	404	64	385	61	197	68	189	50	147	61	393	47	200	44	34	51	32	43	42	51	40	61	100	66	116	84	110	103	40	103	40	103	34	99	26	118	32	315	123	227
Netherlands	24	83	24	91	24	90	26	99	30	76	28	76	32	99	25	76	24	63	24	70	15	61	14	71	20	65	29	72	36	66	37	77	43	82	41	56	60	81	57	86	58	42	
Spain	19	48	8	64	7	57	12	43	14	32	9	51	10	50	7	64	6	84	4	84	9	60	7	68	8	54	13	68	12	82	13	78	19	105	68	82	14	64	14	69	21	50	
Sweden	52	111	53	148	81	92	62	133	57	110	37	133	42	160	37	104	40	92	50	75	41	92	28	92	22	77	57	77	57	36	65	66	66	73	66	66	73	66	66	73	66	73	
United Kingdom	127	87	118	91	132	107	142	86	157	126	119	87	103	128	91	138	95	114	80	85	80	89	83	69	111	99	104	137	128	134	125	139	148	108	169	132	183	138	177	140	222	115	
All others	4	173	6	127	5	143	2	126	5	134	9	93	8	102	5	121	5	96	7	118	4	130	7	122	7	135	8	136	9	125	12	146	14	174	22	156	26	218	34	222	27	184	
Other Europe	56	722	40	633	61	569	60	557	56	658	53	854	36	1,010	33	740	41	865	32	785	29	783	30	830	43	764	61	607	60	792	79	722	88	787	74	825	74	900	92	88	996		
Former Soviet Union	1	23	1	16	1	15	2	20	1	42	1	86	1	258	1	72	0	59	1	105	0	100	0	87	0	93	0	67	0	74	1	72	1	54	0	51	1	47	0	58	1	39	
Norway	16	23	13	39	7	25	11	37	12	34	16	24	10	17	15	25	16	33	9	29	7	29	9	30	15	43	19	30	17	33	15	26	29	31	23	31	20	43	28	35	24	40	
Russia	3	625	3	536	4	480	5	467	2	550	2	688	4	699	0	602	3	695	4	606	2	609	4	674	1	588	6	464	8	640	579	6	652	7	698	4	685	6	771	6	867		
Switzerland	35	49	23	39	46	46	41	29	39	29	31	51	18	32	16	41	20	54	18	40	20	41	18	39	25	38	35	39	34	37	50	40	42	39	57	38	43	36	50	32	51	42	
All others	1																																										

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	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families	USPTO patents	Patent families			
China	2	26	5	42	9	52	11	107	6	93	11	175	11	159	13	253	11	311	11	516	18	835	15	1,186	39	1,344	57	1,842	89	2,836	113	2,761	121	5,698	126	7,539	179	7,944	177	8,058			
India	0	0	1	1	0	0	0	0	1	2	2	0	5	0	1	0	3	1	2	1	4	1	6	1	6	5	10	7	14	13	17	14	24	16	20	8	31	18	34	16			
Japan	862	3,382	975	3,895	1,010	3,041	1,010	2,655	1,101	2,606	1,098	3,259	965	3,264	820	3,547	943	3,442	822	4,201	753	4,760	761	4,885	936	5,100	999	5,872	1,163	6,158	1,192	5,421	1,276	4,708	1,286	3,595	1,239	4,269	1,314	4,171	1,330	3,872	
Malaysia	0	0	0	0	1	0	1	0	1	1	1	1	0	2	1	2	0	5	3	12	2	2	1	5	1	3	2	3	2	7	6	2	2	1	2	2	1	2	9	2	11		
Singapore	1	3	1	1	1	1	0	1	3	2	4	4	3	1	2	0	2	1	3	2	0	1	3	1	1	2	3	4	2	1	3	4	7	3	5	3	5	3	4	4	1		
South Korea	85	407	93	1,383	52	696	53	563	83	496	68	789	52	750	56	1,371	55	1,620	78	1,510	89	1,292	95	934	127	1,024	108	1,357	131	1,782	148	2,230	230	2,281	271	1,634	286	2,023	406	2,501	380	2,651	
Taiwan	87	99	97	111	94	119	119	155	143	162	135	180	130	170	127	230	132	353	128	271	137	234	153	315	144	331	154	310	191	247	349	204	504	247	418	250	1,634	286	2,023	406	2,501	380	2,651
All others	1	3	1	3	2	2	3	5	2	1	0	0	1	5	0	2	4	0	5	2	4	0	5	3	4	1	1	2	3	4	4	3	4	4	3	4	4	3	2	1	3	1	
Middle East	8	5	16	8	12	8	15	9	11	8	11	8	7	7	6	7	10	9	5	9	7	15	12	6	12	10	16	12	22	16	7	33	13	33	15	40	11	47	23	35	18		
Israel	8	4	13	6	12	5	15	5	10	5	11	2	7	4	2	3	8	3	3	4	3	4	10	3	5	11	9	5	11	4	21	6	26	7	29	5	32	12	23	8			
All others	0	0	3	2	0	4	1	4	1	4	0	5	0	4	2	5	1	6	0	5	3	12	2	3	1	5	4	6	5	18	7	6	12	7	8	9	11	6	15	11	11	10	
Africa	2	30	1	21	3	17	3	17	2	22	3	15	5	15	3	13	5	11	4	8	5	14	5	12	7	12	8	1	17	6	12	4	10	3	1	5	3	4	2	4	0		
South Africa	2	21	1	13	3	7	3	14	2	11	3	4	5	12	2	9	5	10	4	5	5	13	5	11	6	5	1	4	3	8	4	3	4	8	3	1	4	0	3	0	0		
All others	0	9	0	7	0	10	0	3	0	11	1	11	0	3	0	3	0	1	0	3	0	1	0	1	2	6	1	8	1	14	0	8	1	2	0	1	0	3	0	2	1	0	
Australia and Oceania	23	28	28	24	25	26	33	46	27	24	24	20	28	46	29	46	26	37	23	36	20	38	19	46	23	51	25	67	36	61	34	64	37	69	39	79	44	60	42	45	50	28	
Australia	20	28	25	24	24	26	28	46	23	24	20	19	26	46	23	45	23	35	19	35	14	37	14	46	19	50	23	66	31	62	27	60	33	66	33	78	33	58	33	45	36	26	
New Zealand	3	0	3	0	1	0	4	0	4	1	4	0	2	0	7	1	3	2	1	5	1	1	5	1	4	1	2	1	5	1	7	2	6	1	5	1	11	2	8	0	14	2	
All others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
Unclassified	0	24	0	35	1	31	1	4	0	4	0	2	0	8	0	78	0	66	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	1	3	1	

EU = European Union; USPTO = U.S. Patent and Trademark Office.

Note(s)

USPTO patents are allocated according to patent inventorship information. USPTO patents are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. However, because PatentsView only provides the original IPC codes as they appeared on patents and not the IPC reformed codes, current Cooperative Patent Classification codes on patents were converted back to the most recent IPC classification to prepare these statistics. Fractional counts of patents were assigned to each technological field on patents to assign the proper weight of a patent to the corresponding technological fields under the classification. International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2012) is used to fill in missing information on priority patents using information in successive filings within the patent families (see technical documentation for details). Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in the year for which its output is accounted. The EU includes 28 member countries. China includes Hong Kong.

Source(s)

Science-Metrix; PATSTAT, accessed April 2019; PatentsView, USPTO, accessed June 2019.