Automatic Faucets

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Background





Auto Faucet
An automatic faucet (sometimes called a sensor faucet) is a faucet with a hands-free mechanism for opening and closing its valve. The use of such faucets is mainly confined to public washrooms where they are an important tool for conserving water and mitigating the spread of germs. They are even called by other names such as Electronic Faucet, Sensor Faucet, Hands Free Faucet, Touch-less Faucet, even Infrared Faucet.

They have several advantages Sensor or automatic faucets have the advantage of shutting off automatically after a hand wash therefore cutting down on water waste. This waste is also a concern for people who care for the environment. When installed in home, sensor faucets alleviate the need for parents to ensure that children have turned off taps. Sensor faucets can benefit elderly people or those suffering from arthritis since there are no handles to twist or pull. Economically, sensor faucets use less water resulting in direct savings on your water bill. In a kitchen setting, they automatically shut off after you have used the correct amount of water for rinsing a pan or washing an apple which also eliminates the worry of a sink overflowing.They have become a central theme in the American experience.

References:Automatic Sensor Faucets, Automatic Faucet

Search Strategy

Control Patents

S.No	Patent/Publication Number	Publication date	Assignee	Title
1	US7997301B2	16/08/2011	Masco Corp	Spout assembly for an electronic faucet
2	US7627909B2	8/12/2009	Kohler Co	Faucet sensor mounting assembly
3	US7174577B2	13/02/2007	Technical Concepts LLC	Automatic proximity faucet
4	US7150293B2	19/12/2006	Masco Corp	Multi mode hands free automatic faucet
5	US6513787B1	4/2/2003	American standard INT INC	Touchless fluid supply interface and apparatus
6	US20100071126A1	25/03/2010	Geberit INT AG	Faucet controlled in a contactless manner
7	US20090100593A1	23/04/2009	Black Pearl Industries	Automatic hand washing system
8	US20080283786A1	20/11/2008	Ultraclenz LLC	Infrared retrofit faucet controller
9	EP1019791B1	12/6/2002	Wonder E C LLC	Water faucet with touchless control
10	EP0921238A1	9/6/1999	Grohe armaturen friedrich	Electrically controlled water tap

Classifications

The following classifications were considered while searching for patents.

US Classifications

US Class	Description
4/623	Baths, closets, sinks, and spittoons - with proximity operated valve
4/678	Baths, closets, sinks, and spittoons -faucet or spout
137/001	Fluid handling - Processes
137/551	Fluid handling - with indicator, register,recorder,alarm or inspection means
137/613	Fluid handling - flow path with serial valves and/or closures
137/801	Fluid handling - Faucets and spouts
251/12904	Valves and valve actuation -remote control system for electrical actuator
340/573.1	Communications Electrical - human condition responsive indication system

IPC/ ECLA Classificatioins

IPC/ ECLA Class	Description
A47K000512	Holders or dispensers for soap, toothpaste or the like - for liquid or pasty soap
E03C000105	Plumbing installations for fresh water - arrangement of devices on wah basins, baths, sinks for remote control of taps
E03C000105D2	Plumbing installations for fresh water - arrangement of devices on wah basins, baths, sinks for remote control of taps - using touchless sensors
F15D000102	Influencing flow of fluids in pipes or conduits
F16K001100	Multiple way valves
F16K001514	Ckeck valves - with flexible valve members
F16K0031	Valves , Taps,Cocks - Operating Means

Micropatent Search

Databases Covered: US, EP, WO, JP, DE, GB, FR
Years:- 1991 to 2011

S.No	Search Comments	results	criteria	Search String
1	Classes - Touchless control of Faucets	907 hits	Any Classification	E03C000105D2 or 004623
2	Keywords - Touchless Faucets	1140 hits	Claims, Title or Abstract	(faucet*1 or (water near3 (tap or taps)) or spigot*1) NEAR4 (automatic*4 or (on adj demand) or sensor*1 or proximity or touchless or (touch adj less) or touchfree or (touch adj free) or electronic*4 or electric*4 or (hands adj free) or (contact adj (free or less)))
3	Keywords - Control of Faucets	533 hits	Claims, Title or Abstract	(((human or man or woman or person*1 or humanbeing*1 or men or women) near3 (detect*3 or present or presence or movement or moving or action*1 or gesture*1)) or (voice near3 activat*3) or (control*4 near3 (algorithm*1 or mechanism*1 or system*1)) or (sensor*1 near3 signal*1)) SAME (faucet*1 or (water near3 (tap or taps)) or spigot*1)
4	Classes of Faucets		Any Classification	137801 or 137613 or F16K001514 or F16K001100 or A47K000512 or E03D000124 or 004678 or F16K0031* or 137001 or 239067 or 137551 or F15D000102 or 25112903 or 3405731
5			Full patent spec.	(faucet*1 or (water near3 (tap or taps)) or spigot*1) NEAR10 (automatic*4 or (on adj demand) or sensor*1 or proximity or touchless or (touch adj less) or touchfree or (touch adj free) or electronic*4 or electric*4 or (hands adj free) or (contact adj (free or less)))
6		1135 hits	Combined query	4 AND 5
7	Class - Plumbing Installation		Any Classification	E03C000105
8			Full patent spec.	(faucet*1 or (water near3 (tap or taps)) or spigot*1) SAME(automatic*4 or (on adj demand) or sensor*1 or proximity or touchless or (touch adj less) or touchfree or (touch adj free) or electronic*4 or electric*4 or (hands adj free) or (contact adj (free or

				less)))
9		944 hits	Combined query	7 AND 8
10		2645 hits (1618 Families)	Combined query	1 OR 2 OR 3 OR 6 OR 9

Interactive Taxonomy

```
.markmap-node {
    cursor: pointer;
}

.markmap-node-circle {
    fill: #fff;
    stroke-width: 1.5px;
}

.markmap-node-text {
    fill:  #000;
    font: 10px sans-serif;
}

.markmap-link {
    fill: none;
}

pre, .mw-code{
  background-color: transparent;
}
d3.xml("https://www.dolcera.com/wiki/images/Mmap1164%281.1%29.mm", function(error, data) {
    if (error) throw error;

    markmap("svg#mindmap_d60f17290bbc878cf1cef4265f800143", data, {
        preset: "colorful",
        linkShape: "diagonal"
    }, "xml");
  });
```

Dashboard

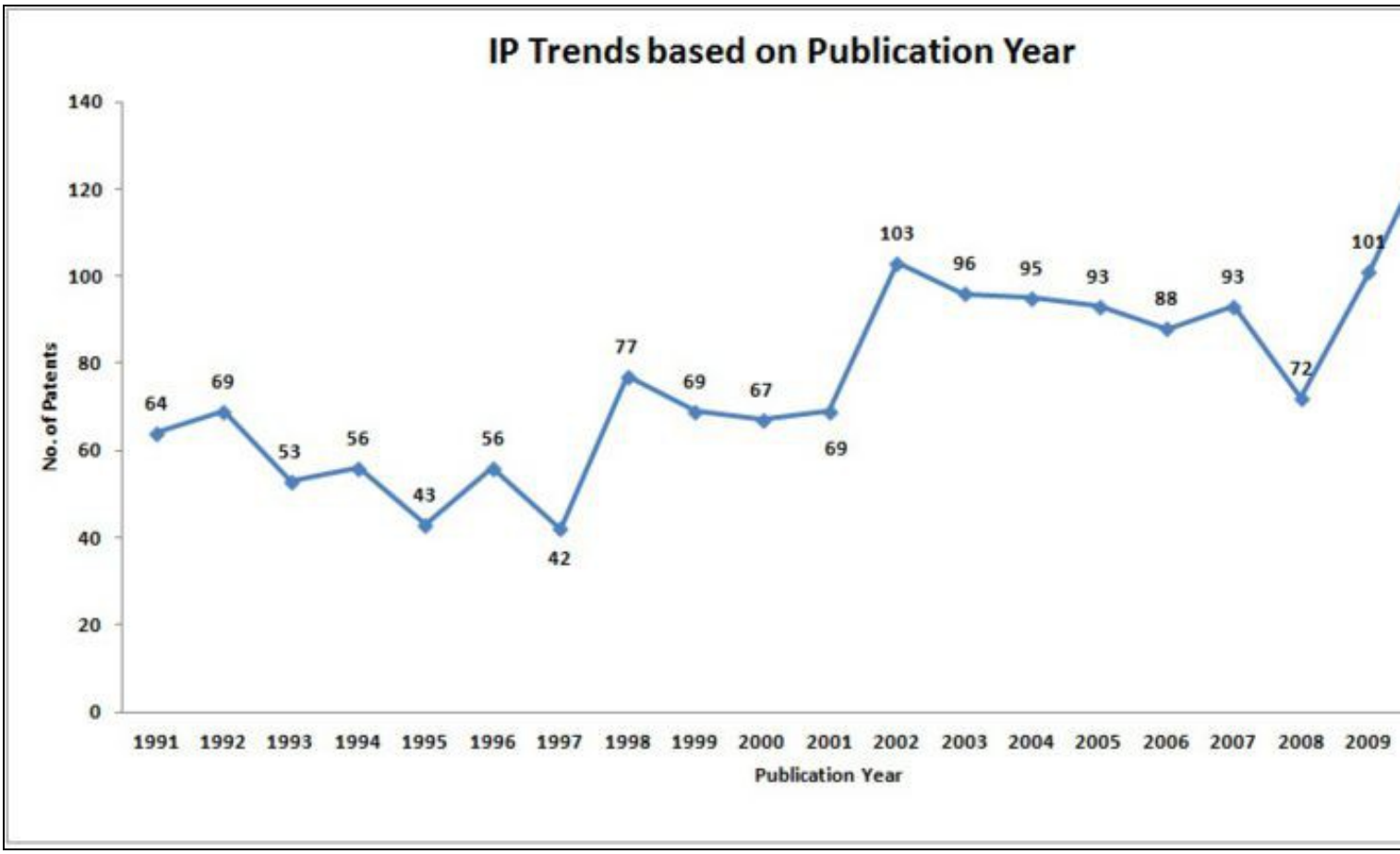
The Dashboard is Dolcera's visualization platform to present the organized patent landscape

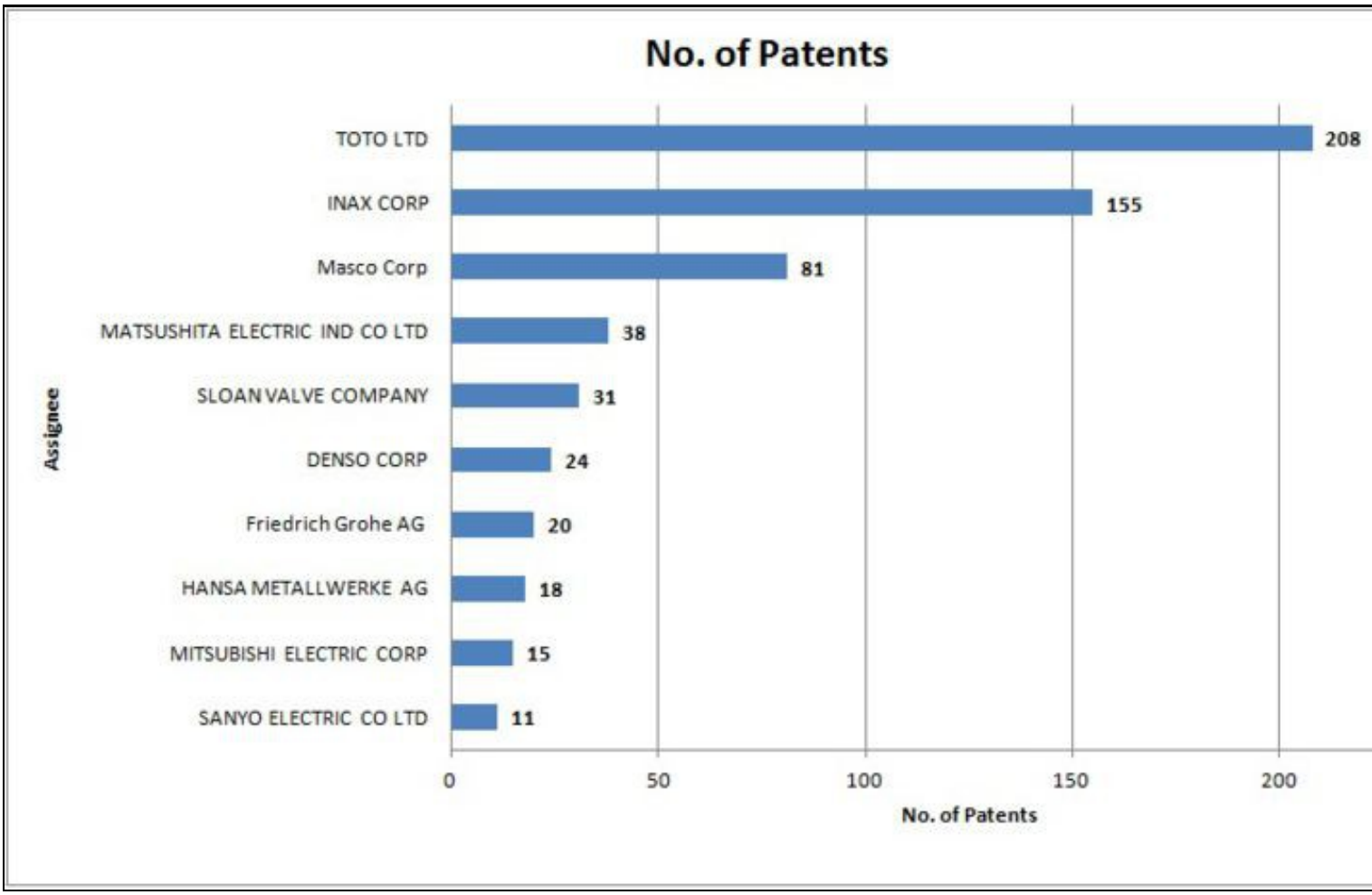
Dashboard Link

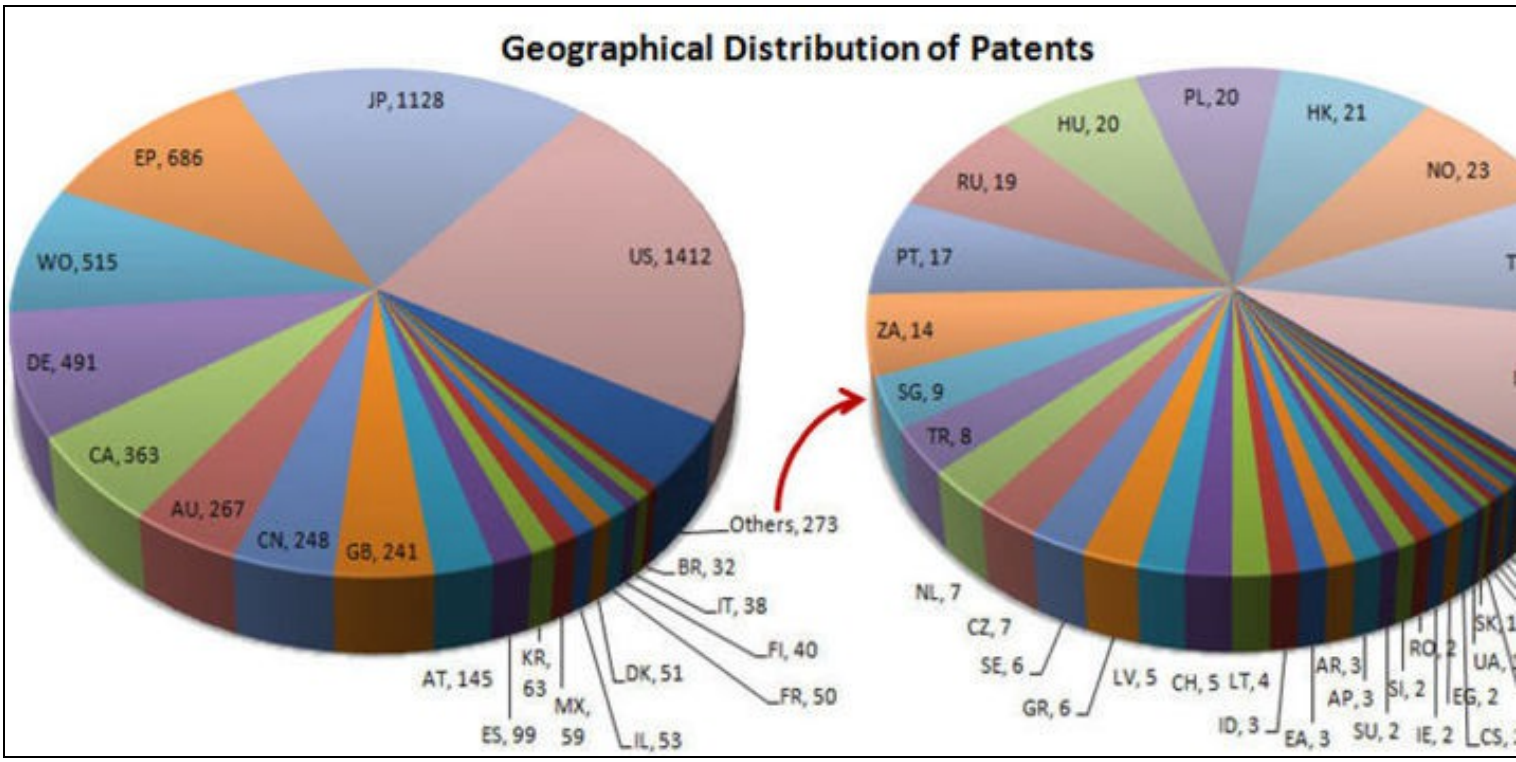
Automatic Faucets - Dashboard	

- Best viewed in Internet explorer 6 and higher versions
- Flash Player is essential to view the Dolcera dashboard

Patent Analytics


IP Trends based on Publication Year
No. of Patents
Publication Year
140
120
100
80
60
40
20
0
1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009
64 69 53 56 43 56 42 77 69 67 69 103 96 95 93 88 93 72 101


No. of Patents
Assignee
TOTO LTD 208
INAX CORP 155
Masco Corp 81
MATSUSHITA ELECTRIC IND CO LTD 38
SLOAN VALVE COMPANY 31
DENSO CORP 24
Friedrich Grohe AG 20
HANSA METALLWERKE AG 18
MITSUBISHI ELECTRIC CORP 15
SANYO ELECTRIC CO LTD 11
0 50 100 150 200
No. of Patents



Sample Analysis

A sample of 10 patents are categorized based on the taxonomy. Problem which a patent addresses and solution to the problem are also included in the analysis. The analysis sheet can be downloaded from the link given below.

Automatic Faucets Analysis Sheet

Design Patent Search

Classifications

Classes related to faucets from US and Locarno classifications are given in the table below.

Classification	Class	Definition
US Design Class	23/238	ENVIRONMENTAL HEATING AND COOLING; FLUID HANDLING AND SANITARY EQUIPMENT/ Hand or foot operated pump or well curb/ Faucet fixture
	23/250	ENVIRONMENTAL HEATING AND COOLING; FLUID HANDLING AND SANITARY EQUIPMENT/ Valve or body therefor/ Element or attachment/ Handle
	23/255	ENVIRONMENTAL HEATING AND COOLING; FLUID HANDLING AND SANITARY EQUIPMENT/ Valve or body therefor/ Element or attachment/ Spout
Locarno Class	23/01-F0039	Indication of Goods or Services/ Faucet handles
	23/01-F0040	Indication of Goods or Services/ Faucets

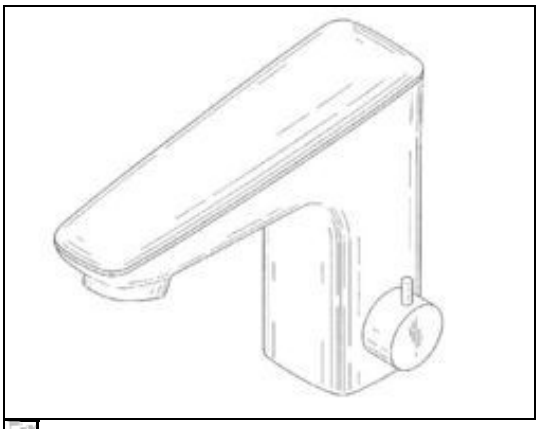
Design Search

A Sample design search for a product of TOTO is shown in the table below.

Product	Design Patent



POWER FAUCET



USD638102 Faucet