

SEARCH HISTORY

Application Number	PCT/US 20/32757
Search Conducted By	RBB
Search Approved By	RBB

CPC/IPC Classifications Searched	IPC (8): B01F 3/04; B05B 17/06; F21S 10/04 (2020.01) CPC: B01F 3/04; B05B 17/06; F21S 10/04; B01F 3/0407; B05B 17/0684
Date Conducted	20 July 2020 (20.07.2020)

Documentation Searched	IPC (8): B01F 3/04; B05B 17/06; F21S 10/04 (2020.01) CPC: B01F 3/04; B05B 17/06; F21S 10/04; B01F 3/0407; B05B 17/0684 (Classifications, Keyword limited)
Search Terms Used	Flame, fire, liquid, oil, fuel, transducer, piezoelectric, PZT, channel, passage, mist, vapor, cloud, spray, light, LED, diode, outlet, output, orifice
Date Conducted	20 July 2020 (20.07.2020)

Electronic Database Searched	PatBase
Files Searched	Full-text: AU BE BR CA CH CN DE DK EP ES FI FR GB IN JP KR SE TH TW US WO Bibliographic: (Europe) AT BA BE BG CH CS CY CZ DD DK EE ES FI GE GR HR HU IE IS IT LT LU LV MC MD MT NL NO PL PT RO RS SE SI SK SM TR UA YU (Asia) EA GC HK ID IL IN KZ MN MY PH RU SG SU TH TJ TW UZ VN (North America) CA CR CU DO GT HN MX NI PA SV TT (South America) AR BR CL CO EC PE UY (Australasia) AU NZ (Africa) AP DZ EG KE MA MW OA ZA ZM ZW
Date Conducted	20 July 2020 (20.07.2020)

Search Logic:

Classification search

Search 10: IPC=(B01F3/04 OR B05B17/06 OR F21S10/04) (Results 32734)
Search 11: CPC=(B01F3/04 OR B05B17/06 OR F21S10/04 OR B01F3/0407 OR B05B17/0684) (Results 2515)
Search 12: 10 OR 11 (Results 33054)
Search 13: 12 AND FT=(artificial OR simulat*) NEAR (flame% OR fire% OR Candle%) (Results 1147)
Search 14: 13 AND FT=(transducer% OR piezoelectric% OR PZT) (Results 31)
Search 15: 12 AND FT=shap* NEAR (mist% OR vapor%) (Results 142)

Search 16: 15 AND FT=(mist OR vapor%) NEAR plume% (Results 4)

Keyword only search

Search 17: FT=(artificial OR simulat*) NEAR (flame% OR fire% OR Candle%) (Results 9218)

Search 18: 17 AND FT=(transducer% OR piezoelectric% OR PZT) (Results 407)

Search 19: 18 AND FT=shap* NEAR (mist% OR vapor%) (Results 5)

Search 23: FT=((mist* OR air OR vapor) NEAR (channel% OR Passage%)) AND aroma* (Results 10308)

Search 24: 23 AND FT=(mist OR vapor) NEAR outlet% (Results 263)

Search 25: 24 AND FT=(housing OR enclosure%) AND (liquid OR oil) (Results 125)

Search 26: 25 AND FT=nozzle% (Results 46)

Forward/backward search

Search 2: PN=(US10309599 OR US20190293250) (Results 1)

Search 3: CTF=2 OR CTB=2 (Results 17)

Search 4: PN=US2012020052 (Results 1)

Search 5: CTF=4 OR CTB=4 (Results 117)

Search 6: 5 AND FT=(external OR exterior) NEAR (fan OR fan) (Results 4)

Search 7: 5 AND FT=(external OR exterior) NEAR (blade OR fan OR member OR mechan*) (Results 8)

Search 8: PN=US2017360980 (Results 1)

Search 9: CTF=8 OR CTB=8 (Results 21)

Supplemental search

Search 1: PA=(angelotti, philip) (Results 1)

Electronic Database Searched	Google Patents
Date Conducted	20 July 2020 (20.07.2020)
Search Logic:	
artificial candle atomizer About 283 results	
artificial candle liquid AND wick AND flicker About 100 results	
artificial candle liquid AND wick AND flicker AND (mist OR spray OR vapor) About 52 results	
artificial candle liquid AND wick AND flicker AND (mist OR spray OR vapor) AND (transducer OR piezoelectric OR PZT) About 33 results	
artificial candle liquid AND wick AND flicker AND (mist OR spray OR vapor) AND (transducer OR piezoelectric OR PZT) AND (light OR LED OR diode) About 33 results	
artificial candle liquid AND wick AND flicker AND (mist OR spray OR vapor) AND (transducer OR piezoelectric OR PZT) AND (light OR LED OR diode) AND (flame OR fire) About 30 results	
artificial candle liquid AND wick AND flicker AND (mist OR spray OR vapor) AND (transducer OR piezoelectric OR PZT) AND (light OR LED OR diode) AND (flame OR fire) AND (outlet OR output OR orifice) About 27 results	
artificial candle liquid AND wick AND flicker AND (mist OR spray OR vapor) AND (transducer OR piezoelectric OR PZT) AND (light OR LED OR diode) AND (flame OR fire) AND (outlet OR	

output OR orifice) AND (shape OR plume) About 26 results

Electronic Database Searched	Google Scholar
Date Conducted	20 July 2020 (20.07.2020)
Search Logic:	
(artificial OR simulated) About 5,310,000 results	
(artificial OR simulated) AND (flame OR fire) About 3,390,000 results	
(artificial OR simulated) AND (flame OR fire) AND (liquid OR oil OR fuel) About 2,110,000 results	
(artificial OR simulated) AND (flame OR fire) AND (liquid OR oil OR fuel) AND (transducer OR piezoelectric OR PZT) About 38,500 results	
(artificial OR simulated) AND (flame OR fire) AND (liquid OR oil OR fuel) AND (transducer OR piezoelectric OR PZT) AND (light OR LED OR diode) About 30,300 results	
simulated candle About 26,200 results	
simulated candle AND external (fan OR pump OR oscillator) About 13,300 results	
simulated candle AND external (fan OR pump OR oscillator) AND (flicker OR wave OR shake) About 6,770 results	

Electronic Database Searched	Google Web
Date Conducted	20 July 2020 (20.07.2020)
Search Logic:	
(artificial OR simulated) About 1,140,000,000 results	
(artificial OR simulated) AND (flame OR fire) About 569,000,000 results	
(artificial OR simulated) AND (flame OR fire) AND (liquid OR oil OR fuel) About 208,000,000 results	
(artificial OR simulated) AND (flame OR fire) AND (liquid OR oil OR fuel) AND (transducer OR piezoelectric OR PZT) About 2,400,000 results	
(artificial OR simulated) AND (flame OR fire) AND (liquid OR oil OR fuel) AND (transducer OR piezoelectric OR PZT) AND (channel OR passage) About 994,000 results	
(artificial OR simulated) AND (flame OR fire) AND (liquid OR oil OR fuel) AND (transducer OR piezoelectric OR PZT) AND (channel OR passage) AND (mist OR vapor OR cloud OR spray) About 2,560,000 results	
(artificial OR simulated) AND (flame OR fire) AND (liquid OR oil OR fuel) AND (transducer OR piezoelectric OR PZT) AND (channel OR passage) AND (mist OR vapor OR cloud OR spray) AND (light OR LED OR diode) About 2,610,000 results	
(artificial OR simulated) AND (flame OR fire) AND (liquid OR oil OR fuel) AND (transducer OR piezoelectric OR PZT) AND (channel OR passage) AND (mist OR vapor OR cloud OR spray)	

AND (light OR LED OR diode) AND (outlet OR output OR orifice) About 2,430,000 results