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| 1 | COMBUSTION BURSTS OR FLARE-UPS IN PULSES OR SERIAL PATTERN | 26 | ..Test circuit activated, then inactivated in starting |
| 2 | PROCESS OF COMBUSTION OR BURNER OPERATION | 27 | .Providing repeated start attempts prior to shutdown upon failure to establish combustion |
| 3 | .Decarbonizing, cleaning or purging | | |
| 4 | .Feeding flame modifying additive | 28 | .Actuation sequence of electric feed heater and feed flow controller or igniter |
| 5 | .Burning waste gas, e.g., furnace gas, etc. | | |
| 6 | .Starting or shutdown procedure | 29 | .Control of purger, of scavenger or of combustion start-up delay period |
| 7 | .In a porous body or bed, e.g., surface combustion, etc. | | |
| 8 | .Flame shaping, or distributing components in combustion zone | 30 | ..Of scavenging or purging pump |
| 9 | ..Whirling, recycling material, or reversing flow in an enclosed flame zone | 31 | ...Scavenging or purging period started by combustion demand |
| 10 | ..Oxidizer added to region of incomplete combustion | 32 | .Of cleaning means |
| 11 | .Heating feed | 33 | .Of extinguishing means |
| 12 | .Controlling or proportioning feed | 34 | ..Wick cover actuated in response to tilting of burner |
| 13 | WITH INDICATOR OR INSPECTION MEANS | 35 | ..By candle length or fuel quantity |
| 14 | .Correlated with action of condition responsive burner control | 36 | .Of or by burner feed supply heating structure |
| 15 | ..Shutdown or aborted start attempt indicated | 37 | ..By controlling admittance of feed to structure |
| 16 | ...Responsive to gas leakage, overflow, abnormal pressure or electrical component malfunction | 38 | ...By pressure of feed in structure |
| 17 | .Burner component position indicator | 39 | ...By level of liquid feed in structure |
| 18 | TIMER, PROGRAMMER, RETARDER OR CONDITION RESPONSIVE CONTROL | 40 | ...By linear expansion of feed holder |
| 19 | .Responsive to combustion chamber pressure | 41 | ..Supply of heat to heating structure controlled |
| 20 | .Of or by exhaust damper or exhaust pump | 42 | .Sensor of first burner controls second burner, e.g., pilot and main, etc. |
| 21 | .By combustion destructible element, e.g., fusible plug, etc. | 43 | ..With electrical igniter |
| 22 | .By sensing of gas leakage, flashback or escaped flame | 44 | ...Igniter deenergized by fuel pressure variation in start effort |
| 23 | .Of means protecting burner component from combustion heat | 45 | ...Igniter deenergized by timer, programmer or retarder |
| 24 | .With test circuit checking or analyzing flame sensing circuit for malfunction | 46 | ...Igniter deenergization responsive to first burner ignition |
| 25 | ..Utilizing unidirectional electrical conducting effect of flame | 47 | ...With manual igniter actuation |
| | | 48 | ..Sensor of second burner controls third burner |
| | | 49 | ..And an igniting burner for first burner |
| | | 50 | ..Sensing of flame at both burners required for continued operation of second burner |

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| 51 | ..Both burners cut off upon sensed extinguishment of first burner | 72 | .Of igniter and feed controlled sequence |
| 52 | ...First burner manual reset valve cut off | 73 | ..By timer or retarder |
| 53 |Single valve cuts off branched flow | 74 | ..Combustion zone sensor controls igniter |
| 54 |Reset includes structure preventing feed to second burner prior to sensed combustion at first burner | 75 | .By combustion or combustion zone sensor |
| 55 | ...Burners independently controlled by reset valves | 76 | ..Combustion product composition sensor |
| 56 | ...Having cut-off valve by-pass or additional supply to first burner | 77 | ..Of shutdown by response to sensed combustion failure or overheat |
| 57 | ..Manual reset of second burner required upon first burner extinguishment | 78 | ...By electrical control circuit |
| 58 | ..Sensor controls diaphragm motor of second burner valve | 79 |Photoelectric sensor |
| 59 | ..Electrical or magnetic sensor controls second burner | 80 |Thermoelectric generator sensor |
| 60 | .Of sequential operation of plural burners, e.g., pilot and main, etc. | 81 | ...Manual setting means for biased valve released upon sensed combustion |
| 61 | ..By fuel feed pressure variation | 82 | ...With fuel feed means downstream of shutdown valve |
| 62 | .Of diverse feed or feed rate in starting, e.g., enriching fuel mixture in starting, etc. | 83 | ...Sensor movement losses means holding shutdown valve open against bias |
| 63 | ..Combustion sensor establishes "run" feed | 84 |Held by latch, latch released by sensor |
| 64 | .Level responsive means controls fuel level in wick pot or pot type burner | 85 |Expanding fluid sensor |
| 65 | .Fuel feed cut off by collected fuel over-flow | 86 | .By manually started timer or retarder, or by time of day device |
| 66 | .Sensor of electrical condition or temperature of electrical igniter controls fuel feed | 87 | ..Of combustion initiating means, e.g., match striker, etc. |
| 67 | .Igniter heat up and fuel feed sequence controlled by timer or retarder | 88 | .By tilting, jarring, or mechanical damage |
| 68 | .Sensing of hot combustion zone condition blocks restart attempt | 89 | .By condition of burner feed or feed means |
| 69 | .Shutdown by sensed absence of flame in proving period | 90 | ..Sensor of one feed controls another feed |
| 70 | ..Recycle through proving period on sensing of failure of established flame | 91 | PROJECTOR AND IGNITER FOR LIQUID OR GELLED FUEL SLUG OR ROD, E.G., FLAME THROWER, ETC. |
| 71 | ..Igniter cut off when flame establishment proved | 357 | ILLUMINATING FLASH DEVICE, E.G., PHOTOGRAPHIC BULB, ETC. |
| | | 358 | .Fuel charge within sealed transparent casing, e.g., bulb |
| | | 359 | ..Plurality of bulbs associated for sequential ignition |
| | | 360 | ..Coated casing |
| | | 361 | ..Percussive ignition means ignites charge |
| | | 362 | ..Electrically ignited primer ignites charge |
| | | 363 | .Having fuel charge feeding means |
| | | 364 | .Having protective shield |

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| 365 | .Electrical means ignites charge | 131 | ..By movably mounted burner nozzle |
| 99 | MAGNESIUM STRIP | | |
| 100 | INCANDESCENT MANTLE | 132 | .Electrical igniter |
| 101 | ..Resiliently supported | 133 | .Solid ignition charge dispenser and striker |
| 102 | ..Wick feeds vapor to mantle | 134 | .Actuation of ignition member releases biased open cover |
| 103 | ..Heated feed line section | 135 | .Cover, latched closed, biased open; igniter actuated on release |
| 104 | ..Discrete flame holder heats section, e.g., auxiliary jet, etc. | 136 | ..Abrasive wheel moves with cover about a common axis |
| 105 | ..Within mantle | 137 | .Cover actuator cocks and releases abrasive member drive |
| 106 | ..Above upwardly fed mantle | 138 | .Common axis for cover and abrasive wheel |
| 107 | ..Heated by downwardly fed mantle | 139 | ..Actuator (e.g., finger piece) engaged with cover for relative movement |
| 108 | ..Distinct means increases pressure at mantle | 140 | ...Gear drive between cover and actuator |
| 109 | ..Depends below downwardly facing fuel discharger | 141 | .One way drive means between cover and abrasive wheel |
| 110 | ..Supported above upwardly facing fuel discharger | 142 | BURNER HEAD OR IGNITER REMOVABLY SECURED TO FUEL TANK BY ENCIRCLING FRAME OR CASING |
| 111 | ..Supporting or protecting means external of mantle | 143 | .Burner head on tank and igniter on frame or casing |
| 112 | ..Extending within mantle | 144 | BURNER CAP, COVER OR EXTINGUISHER |
| 113 | ..On upwardly opening mantle | 145 | .Fluid |
| 114 | WITH MEANS ATTENUATING SOUND OR PULSATION | 146 | .Movably or removably mounted cover for flame holder |
| 115 | COMBUSTION PRODUCTS RETURN STRUCTURE | 147 | ..Cover bars oxidizer from catalyst |
| 116 | ..Recirculation about mixing or combustion chamber wall or baffle | 148 | ..Connected to lamp chimney or its support |
| 117 | WITH EXTERNAL DRAIN FOR SURPLUS LIQUID FUEL DISCHARGED INTO VAPORIZATION OR COMBUSTION ZONE | 149 | ..And distinct snuffer within cover |
| 118 | ..Drained collecting basin spaced from zone | 150 | ..Cover operatively interconnected with feed controller or feed pump |
| 119 | WITH DRIP OR LEAKAGE COLLECTOR | 151 | ..And windshield within covered zone |
| 120 | WITH WICK TRIMMING, TREATING, INSERTING, OR REMOVING MEANS | 152 | ..Pivotally mounted |
| 121 | WITH APPARATUS CLEANING, PURGING OR SCAVENGING MEANS | 153 | CORRELATION OF FUEL OR POWER SUPPLY WITH COMPONENT MOVEMENTS IN A DISABLING AND ENABLING SEQUENCE |
| 122 | ..Scraping or clearing member | 154 | WITH REPAIR, ASSEMBLY OR DISASSEMBLY ADJUNCT |
| 123 | ..Feed orifice penetrating | 155 | .Slide or roller |
| 124 | WITH RESERVE FLINT HOLDER | 156 | CONVERTIBLE |
| 125 | WITH SIMULATION FEATURE | 157 | MEANS AT CHAMBER OUTLET ESTABLISHING COMBUSTION PRESSURE DISTINCT FROM AMBIENT |
| 126 | WITH ORNAMENTATION OR FLAME COLORING ADDITIVE | | |
| 127 | BURNER ASSEMBLY INCLUDES IGNITER ELEMENT AND REMOVABLE HAND MANIPULATABLE TORCH | | |
| 128 | ..Electrical igniter | | |
| 129 | BURNER HEAD COVER OPERATIVELY INTERRELATED WITH IGNITER | | |
| 130 | ..Interconnected with valve in fuel feed passage | | |

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| 158 | .Chamber outlet forms jet nozzle | 184 |Pivotally adjustable blades |
| 159 | FUEL DISPERSER INSTALLED IN FURNACE | 185 | ..Feed whirling means at wall |
| 160 | ..Disperser cooled by fluid additional to furnace feed | 186 | ..Shiftably mounted disperser; or flame shaper |
| 161 | .Furnace heated feed line section | 187 | ..Feeds discharged coaxially |
| 162 | ..Distinct sections feeding disparate fluids to furnace | 188 | ...Air chamber with inlet control surrounds disperser at wall |
| 163 | ..Section feeds steam to disperser | 189 | .Disperser adjustably mounted for movement relative to furnace wall opening |
| 164 | ..Section feeds oxidizer through furnace wall opening spaced from that for disperser | 190 | .Water, air or steam feeder spaced from disperser |
| 165 | ...Oxidizer fed at spaced points along combustion path | 191 | BURNER IGNITED BY FLASH FLAME THROUGH CONDUIT |
| 166 | ..Section feeds oxidizer to disperser or through disperser furnace wall opening | 192 | .Conduit feed means spaced from ignited burner |
| 167 | ...Section is furnace wall cavity leading to disperser | 193 | .Unique burner manifold orifice feeds conduit |
| 168 | ..Rotary disperser projects at surrounding flange surface | 194 | ..Nipple forms orifice and anchors conduit |
| 169 | ..Mixing ring or group of deflectors overhangs flange surface | 195 | FUEL DISTRIBUTOR UNDERLYING COMBUSTION ANNULUS HAVING AIR FEEDING PERFORATIONS |
| 170 | .Disperser feeds into permeable mass, e.g., checkerwork, etc. | 196 | .With pilot burner, primer, or electric combustion starter |
| 171 | .With discrete flame directing baffle | 197 | .Annulus movably mounted for access to distributor |
| 172 | ..Baffle means forms flame ring around combustion chamber | 198 | .Distributor annulus feeds combustion annulus through coaxial throat or row of orifices |
| 173 | .Feed projected tangential to wall of circular combustion chamber | 199 | .Distributor receives heated fuel from annulus heated line section |
| 174 | .Spaced fuel dispersing orifices within furnace | 200 | .Coaxial combustion chambers with intermediate air space |
| 175 | ..Intersecting fuel streams | 201 | .Structure surrounding annulus guides combustion air to perforations |
| 176 | ...Opposed rows of streams of radially directed streams in a common plane | 202 | STRUCTURAL INSTALLATION |
| 177 | ..Annular arrangement with fuel directed on surrounding combustion chamber wall | 203 | FLAME HOLDER MOUNTED ON HEATED SINGLE CHARGE FUEL TANK |
| 178 | ..Row with parallel discharge through combustion chamber wall | 204 | .Fuel jet from heated tank traverses wick burner |
| 179 | ...Longitudinally adjacent rows | 205 | .Priming cup heats tank |
| 180 | ..Row across combustion chamber | 206 | .Having heat conductor between spaced flame holder and tank |
| 181 | .Plural feed means extending to common wall opening of furnace | 207 | HEATED LINE SECTION FEEDS FLAME HOLDER |
| 182 | ..Duct with air whirling means surrounds disperser | 208 | .Electrically heated section |
| 183 | ...Row of stationary blades coaxial with disperser whirled air | 209 | .Section and its heat source mounted for relative movement, e.g., to vary thermal effect, etc. |

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| 210 | .Heated section supplied by separate diverse feeds, e.g., water and fuel, etc. | 235 | ..Heated line supplies generated gas to main of distributing system |
| 211 | ..One feed heated before being fed to section | 236 | .Section heated by auxiliary burner |
| 212 | ...Another feed heated before being fed to section | 237 | ..Main fuel line branch feeds auxiliary burner |
| 213 | .Air from section discharged downwardly toward fuel surface | 238 | .Unheated fuel supply to flame holder |
| 214 | ..Fuel surface is film descending from elevated structure | 239 | ..Heated feed aspirates or atomizes fuel |
| 215 | .Distinct exhaust products line heats feed line | 240 | .Insert in heated fuel line, e.g., packing, etc. |
| 216 | .Lines for diverse feeds heated | 241 | ..Lifts fuel from tank to heated section by capillary action |
| 217 | ..With mixing upstream of combustion zone | 242 | .Housing encloses heated section and flame area |
| 218 | .Basin for burning liquid fuel heats feed line section | 243 | .Flame enclosure comprises, or conducts heat to heated section |
| 219 | ..Heated line feeds steam to fuel basin area | 244 | .Discrete jet section of flame holder heats its fuel line |
| 220 | ..Separate basin and flame holder fuel lines | 245 | .Unheated oxidizer supply to line between heated section and feed discharger |
| 221 | ...Valved branch of flame holder feed line feeds basin | 246 | ..Feed discharger wall cavity forms heated section |
| 222 | ..Basin receives fuel from terminus of heated fuel line | 247 | .Fuel conduit within flame or combustion products zone |
| 223 | ..With selective deflector directing fuel to basin | 248 | ..Distinct baffle directs flame at or around conduit |
| 224 | ...Horizontally extending cavity of basin forms heated section | 249 | WITH FEATURE FOR ACCESS TO OR EXPOSURE OF FLAME HOLDER |
| 225 | ..Basin mounted on valve housing | 250 | .With match scratching surface within enclosure |
| 226 | ..Heated fuel drum above basin | 251 | .Enclosure movably mounted for access |
| 227 | ..Basin encompasses vertical heated line section | 252 | WITH ADJUNCTIVE MEANS TO EXTEND OR DEFLECT FLAME BY AIR BLAST OR ASPIRATION |
| 228 | ...Line passes through basin to surrounding, descending discharge structure | 253 | COMBINED |
| 229 | ...Elongated basin parallel to fuel line | 254 | ELECTRICAL OR MECHANICAL IGNITER CORRELATED WITH BURNER FEED |
| 230 | .Auxiliary burner heats wick within heated section | 255 | .Having electric current producer |
| 231 | .Fuel container having means feeding gas to a separate line heating burner and liquid to heated section | 256 | .Switch or electrode of igniter moved by valve element or operator |
| 232 | .Section heated by distinct flame holders, one fed by heated section | 257 | ..Make and break electrode moved |
| 233 | .Heated line supplies its heater and an external structure, e.g., flame holder | 258 | BURNER HAVING ELECTRICAL HEATER OR IGNITER |
| 234 | ..One of a group of similar burners heats section | 259 | .Igniter and separate heater |
| | | 260 | .Adjacent exposed liquid fuel surface on fuel support |
| | | 261 | ..Capillary fuel holder |

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| 262 | ...Resistance type heater or igniter | 291 | ..Fuel body totally within casing, e.g., vigil light, etc. |
| 263 | .Igniter in shelter chamber | 292 | ..Melt handler or receiver |
| 264 | .Spark electrode in front of or adjacent fuel discharger | 293 | ...Follower cap |
| 265 | ..Gun type burner with electrode supported in air blast conduit | 294 | ...Drained or openwork candle grip mounted on melt receiver |
| 266 | ..Spark circuit includes feed terminus | 295 | ..Holder for plural candles |
| 267 | FRictionAL, CHEMICAL OR PERCUSSIVE TYPE IGNITER | 296 | ..Hook, clamp or spike supported candle holder |
| 268 | .Catalytic | 297 | ..Candle mounting attachment for socket type support |
| 269 | .Cap, match or pellet igniting charge holding and firing means | 298 | FIBROUS WICK TYPE FLAME HOLDER |
| 270 | ..Externally accessible operator fires charge within flame enclosure | 299 | .Having feeder or holder for disparate fluid |
| 271 | ..Plural charge holder with presenting structure | 300 | .Means forcing air into flame area |
| 272 | ...Serially connected charges | 301 | .Wick movement limiting structure |
| 273 | .Spark projector, e.g., flint and abrasive striker, etc. | 302 | .Tubular wick having central supporting and air supplying structure |
| 274 | ..Mechanical movement operated abrasive member | 303 | ..Having lateral air inlet passage through wick |
| 275 | ...Stored energy actuated; detent, latch or overcenter release | 304 | ..Having wick raiser |
| 276 | ..Advancing type flint holder | 305 | ...Screw thread on wick carrier |
| 277 | ..Mounted on fuel tank adjacent flame holder | 306 | ...Rotatable threaded rod and follower |
| 278 | SEPARATELY SUPPLIED OR CONTROLLED, PHYSICALLY RELATED FLAME HOLDERS, E.G., DIVERSE FUELS, PILOT AND MAIN, ETC. | 307 | ...Rack and pinion |
| 279 | .Relatively movable | 308 | ...Reciprocated bar |
| 280 | .By multiway valve | 309 | ..Having air guide or distributor |
| 281 | .Correlated controls | 310 | .Having air or flame director, air distributor, or windguard |
| 282 | .Adjustable wick | 311 | ..Transparent director surrounding wick support or guide |
| 283 | .Three mounted in cross igniting relationship | 312 | ..Director passageways, each surrounding wick or flame zone |
| 284 | .Coaxial | 313 | ..Director passageways leading to flame zone |
| 285 | .Having common flame chamber or shield means | 314 | ..Air annulus leads to flame zone |
| 286 | DISCRETE MEANS TRANSMITTING FLAME BETWEEN SEPARATE FLAME HOLDING SECTIONS | 315 | .Having adjustable wick exposure, position, or porosity setting structure |
| 287 | HAVING COMBUSTION STARTING ASSISTANT | 316 | ..Rotatable projection means engages wick |
| 288 | CANDLE, E.G., TAPER, ETC. | 317 | ...Transmission mechanism rotates means |
| 289 | .Having structure additional to wax and wick | 318 | ...Opposed rotatable wick engaging means |
| 290 | ..Height adjuster or maintained flame level | 319 | .Having distinct fuel line between reservoir and wick guide or support means |
| | | 320 | .Liquid fuel container carries wick guide or support |

- 321 ..Having distinct container filling or venting structure
- 322 ..Means supporting displaced wick guide or support on fuel container
- 323 ..Having absorbing, baffling or additional wick supporting structure in container
- 324 ..Detachable closure securing guide to container
- 325 .Coated, impregnated, layered, coupled or reinforced wick
- 326 **POROUS, CAPILLARY, PARTICULATE OR SIEVELIKE FLAME HOLDER, E.G., RADIANT SURFACE BURNER, ETC.**
- 327 .Capillary mass having handle
- 328 .Means supplying fuel for passage through the flame holding structure, e.g., radiant surface burner
- 329 ..Woven screen holds flame
- 330 **DRIP, TRICKLER, OR SHELF-TO-SHELF TYPE BURNER**
- 331 **POT TYPE BURNER**
- 332 .Having feeder or holder for disparate fluid
- 333 .Having means for continuously feeding fuel
- 334 ..With pot or fuel reservoir elevating means
- 335 ..Air feed passage through bottom of pot
- 336 ..Ring structure at pot outlet forms central vertical discharge throat
- 337 ...Structure includes radial air feed passages discharging at throat
- 338 ..Having baffling means within pot confines
- 339 ...Forms separate zones of combustion at fuel surface
- 340 ..Horizontally extending partition having central passage
- 341 .Including exhaust flue having air feed passages
- 342 ..And baffling means within pot
- 343 **WITH SUPPORTING BRACKET, LEG, HOOK, STRAP OR CLIP**
- 344 **FLAME HOLDER AND FUEL TANK ASSEMBLY**
- 345 **FLAME HOLDER HAVING ATTACHED HANDLE**
- 346 **FLASH-BACK CONTROLLING OR PREVENTING STRUCTURE**
- 347 **INCANDESCING OR REFLECTING COMPONENT, E.G., REIGNITING HOT SPOT, ETC.**
- 348 .Flame sweeps dished incandescing surface
- 349 **ADJUNCTIVE, RELATIVELY LOW VELOCITY, FLAME MAINTAINING FUEL PASSAGE**
- 350 **FLAME HOLDER HAVING PROTECTIVE FLAME ENCLOSING OR FLAME STABILIZING STRUCTURE**
- 351 .Including means feeding air axially spaced points of the flame
- 352 ..Axial perforations along combustion tube
- 353 .Tubular member delineates flame
- 354 **MIXER AND FLAME HOLDER**
- 355 .Bunsen burner type
- 356 **MISCELLANEOUS**
- FOREIGN ART COLLECTIONS**
- FOR 000 **CLASS-RELATED FOREIGN DOCUMENTS**

