Processes

2.1 Of weather control or modification
2.2 Snowmaking
3 Including electrostatic charging
4 Vibratory or magneto-strictive projecting
5 Of fuel injection
6 Involving slow diffusion
7 Including centrifugal force or spattering
8 Including mixing or combining with air, gas or steam
9 And additional dissolving or entraining of material in liquid stream
10 Including dissolving or entraining in liquid stream
11 Of discharge modification of flow varying
12 Involving drinking or ornamental fountains
13 Including heating or cooling

Weather Control

14.1 Processes
14.2 Snowmaking

Electrostatic Type

690 Induction charging
691 With automatic safety feature
692 With electrogasdynamic generator in spray device
693 Spray device recovers unused particles
694 With cyclical movable support
695 Plural spray devices
696 Having plural exit openings
697 Fixed member deflects exiting material
698 Forward of nozzle
699 With impeller (e.g., vibrator)
700 Rotary
701 With spray portion intercept member
702 With axially spaced impeller surfaces
703 Dish- or cone-shaped impeller
704 With fluid entrainment
705 With air outlet forward of material outlet
706 With charging electrode mounted on spray device
707 Extending forward of material outlet
708 Pressurized spray material

Fountains or Drinking Tubes and Straws

16 Ornamental
17 With illuminating means
18 With ground distributing means (e.g., lawn sprinklers)
19 With recirculating means
20 With reversible feed and waste chambers
21 Fluid pressure discharging means (e.g., aspirating)
22 Liquid pump, pulsator or follower
23 Drinking
24 With or for attachment to faucet
25 Swivelly mounted single outlet means
26 Swingable into or out of deflecting position
27 With catch basing
28 With flow line valve
29.3 Portable, or with self-contained liquid holder
29.5 Leg or foot actuated valve operator
30 Extensible or flexible bubbler nozzle
31 Converging jets or bubblers (e.g., bubble cups)
32 With self-closing discharge valve
33 Portable drinking tubes and straws
34 With empty or refill signal or indicator
35 Garment or body attached
36 Gravity flow of liquid from supply holder
37 Free drip to open holder
38 Barometric flow to secondary holder
39 Drip discharge from secondary holder
40 To porous distributor to atmosphere
41 Porous distributor to atmosphere
42 To porous distributor exposed to atmosphere
43 With wick or absorbent means removing liquid from holder

January 2012
..Serially arranged wicks or absorbent means

..With means for drip escape from casing

..Nonuse housing or casing arrangement (e.g., stored in supply)

..Reel-type storage

..With flow varying means

...Relatively movable wick and supply for discharge or adjustment

..With means for drip escape from holder

..In housing having multiported wall spaced from absorbent means

..Reel or spool type support means

..Liquid supply in absorbent or porous media only

..Rigid solid form media

..With enclosing casing

...Pad type

...With support for porous or apertured encasing means

...By alignment of apertured members

..Solid form vaporizable material

WITH SELECTIVE PROPORTIONING OR CORRELATED FLOW FOR PLURAL FLUIDS

..Having traversing motion responsive means

WITH CUTOFF OR FLOW VARYING MEANS OPERATED BY MEANS RESPONSIVE TO DISCHARGED FLUID (E.G., GROUND MOISTURE SENSING)

..With overriding second control means

..By level or weight in testing receiver

SERIALLY OPERATED DISTRIBUTION MEANS

WITH SELECTIVELY PRESET FLOW CUTOFF OR INITIATING MEANS

..By rate of flow or volume means

..By programming means

..Timer means

WITH SIGNALS, INDICATORS, RECORDERS, METERS OR CHANGEABLE EXHIBITORS

Audible

Position or extent of motion indicator

With spray material quantity or flow indicating means (e.g., sight gauge)

WITH VISCOSITY OR TEMPERATURE RESPONSIVE CONTROL MEANS

WITH PRESSURE OR FLOW EQUALIZATION MEANS TO PLURAL DISTRIBUTORS

ORCHARD-TYPE MOBILE DISTRIBUTOR COMPRISING FLUENT DISCHARGED INTO GASEOUS CONVEYING CURRENT

..With current directing louvers

WITH MEANS FUSING SOLID SPRAY MATERIAL AT DISCHARGE MEANS

..Plural supply means for solid spray materials

..Electric arc, spark plug or induction heating

...Nozzle with molten pool holder

..Wire or rod type supply

...Moving feeder for fusible wire or rod

..With supply holder for fusible material (e.g., pulverulent solids)

INJECTION NOZZLE HAVING CAPILLARY TYPE FEED PASSAGES

INJECTION NOZZLE HAVING PLUNGER OR VALVE CONTROLLED BY PRESSURE BEYOND NOZZLE OUTLET (E.G., COMPRESSION PRESSURE OPERATED)

UNITARY INJECTION NOZZLE AND PUMP OR ACCUMULATOR PLUNGER

..Accumulator plunger biased to discharge fluid

..Plunger interconnected or mounted bypass

..Plunger interconnected or mounted valve (e.g., outlet valve)

..Fluid operated plunger motor

FLOW REGULATOR OPERATED CONCURRENTLY WITH INTERMITTENT FLUID PUMP

..Plural motor surfaces on flow regulator (e.g., opposed)

UNITARY INJECTION NOZZLE AND VALVE WITH CONTINUOUSLY INTERMITTENT OPERATOR
INJECTION NOZZLE OPENED BY RELIEVING SUPPLY (E.G., ACCUMULATOR TYPE)

PATTERN CONTROL BY SYNCHRONIZING FLOW REGULATOR MEANS WITH CYCLICALLY MOVING DISTRIBUTOR

. Plural outlets with abutment operated flow diverter

CONTAINER FOR NON-FLUID MATERIAL, AND SCATTERING MEANS

. With loading or loading facilitating means

Scattering by direct manual movement

. Body supported

. With means generating or supplying gaseous mixing current

. Laterally extending scatter unit

. Scattering by plural containers

. Container tilted for discharge (e.g., dump truck, etc.)

. Scattering means is flail

. Scattering means has to and fro movement (e.g., vibratory, etc.)

. With overload release or relief

. With means for mounting on tractor

. With feature relating to liquid material

. Convertible or combined

. Ambulant container and laterally extending scatterer

. Including means varying scatter pattern of rotating scatterer

. Adjustable deflector

. Plural, rotary scatterers, on intersecting axes or coaxial and counter rotating

. Hopper and gravity discharge to scatterer receiving material peripherally

. Scatterer at least partially within hopper

. Drive from vehicle motor power take off

. Including raking type conveyor moving material toward scatterer

. Including driven conveyor or follower feeding material horizontally towards scatterer

. Plural scatterers receiving material axially

. Feed means outside of primary supply container

. Screw conveyor

. Including movable gate, barrier or valve upstream of scatterer

. Speed varying means for driven scatterer or feed

. Limit means stopping feed

. Rotating scatterer receiving material peripherally

... Rotating feed or strewing unit (e.g., beater, etc.) upstream of scatterer

. Rotating scatterer

. Plural

. Including agitating means

. Including specific driving means

... From ground wheel

... Manual or pedal

. Scatterer receives material axially

... Scatterer has radially directed tube

. Scatterer is tubular or in surrounding housing

WITH MEANS CAUSING INTERMITTENT INTERRUPTION OF SUPPLY TO DISTRIBUTOR MEANS (I.E., ON-OFF)

. Ground wheel controlled intermitter

WITH MEANS FOR FLUCTUATING FLOW OR PRESSURE OF FLUID SUPPLIED TO DISTRIBUTOR MEANS

WITH MEANS TO VIBRATE OR JIGGLE DISCHARGE

. By electric transducer (e.g., piezoelectric crystal)

NOZZLE CARRIED APERTURED SHIELD AND COLLECTOR

WITH CLEANING MEANS, DRIP COLLECTING, WASTE DISPOSAL OR SOIL PREVENTING GUARDS OR SHIELDS

. Soil preventing gas shield

. Nozzle cleaner, flusher or drainer

. With means for enlarging spray openings beyond normal operating position

... With separate fluid reacting surface
109 ....Reduction of fluid pressure affects opening (e.g., self-draining showers)
110 ...With separate drain or access opening
111 ...Absence of fluid pressure opens drain
112 ...With diverted system fluid or nonspraying fluid for cleaning
113 ...System fluid diverted
114 ...Solid scraping or clearing member
115 ...Member and nozzle mounted for relative motion
116 ....Member is in flow line
117 .....Member moves through spray opening
118 ......By fluid pressure
119 ....Return or reverse flow from outlet
120 .Waste disposal or drip collecting
121 .Drip cup or trough
122 ...Combined with deflector
123 .Solid scraping or clearing member
124 WITH SYSTEM FLUID RELIEF OR RETURN TO SUPPLY
125 .Recirculation within nozzle (e.g., burner nozzle cooling)
126 .By pressure responsive means (e.g., to sump or atmosphere)
127 .Return from liquid pump outlet to supply holder (e.g., tank filling, mixing or pump unloading)
127.1 REACTION MOTOR DISCHARGE NOZZLE WITH JACKETED OR HOLLOW PORTION FOR COOLING FLUID FLOW
128 WITH HEATING OR COOLING MEANS FOR THE SYSTEM OR SYSTEM FLUID
129 .Employing waste heat or exhaust gases
130 .Vehicle mounted heater and spray device
131 ....With plural fluids through outlet means
132 ...In terminal element (e.g., injection nozzle cooling)
132.1 ...Heat exchange fluid
132.3 ...Cooling of terminal element
132.5 ....Coolant is spray fluid or is added to spray fluid
133 .Spray terminal carrying member carries heater
134 ..With additional upstream heating means
135 .Heating means
136 ..Vapor generator
137 ...Plural fluids through outlet means
138 ....One an aspirating fluid for discharge
139 ..Spaced jacket or compartment for heating fluid
140 WITH MEANS MOVABLY MOUNTING SUPPLY MEANS FOR DISCHARGING CONTENTS
140.1 Rotating tank type
140.2 WITH AGITATION OF SUPPLY MEANS
141 .Gas agitation
142 .Movably mounted tank or tank part (e.g., vibratory type)
143 .Vapor generator
144 ...Plural fluids through outlet means
145 ...One an aspirating fluid for discharge
146 WITH MOBILE TANK-TYPE SUPPLY MEANS
147 .Ground traversing wheel-form supply tank
148 .With means replenishing system supply
149 .With means movably mounting supply container relative to its support
150 ...Ground wheel operated discharge means or controller
151 ...Ground wheel operated pump
152 ...Plural bars or booms
153 ...Plural spray heads
154 ...Plural bars or booms
155 ...Plural spray heads
156 ...Plural bars or booms
157 ...Plural spray heads
158 ...Plural bars or booms
159 ...Plural spray heads
160 INDIVIDUALLY MOUNTED FOR MOTION

January 2012
...Plural diverse bars or booms...Adjustable distributor...
...Extensible or telescoping boom...
...Plural sections articulated or pivotally mounted...
....Symmetrically disposed outboard of carrier...
....With central section...
...Flexible coupling section to distributor...
...Having means to selectively control discharge paths...
.Aircraft carried.
..Vehicle drawn or carried
...Track guided (e.g., rolling stock)
...Locomotive cab type attachments
...With flexible coupling section
.Adjustable distributor

MOBILE DISTRIBUTOR
.Irrigation device
..Open pond or ditch type supply
...Floating distribution means
..Nozzles spaced along mobile pipeline
...Including additive supply means
...Center pivot
...With noncircular coverage
...Including means allowing articulation of adjacent pipe sections
....With means to detect misalignment
...Including means allowing articulation of adjacent pipe sections
....With means to detect misalignment
..Trail tubes
...Propelling means
....Reel take-up
....Prime mover
....Fluid motor or spray fluid operated
...Guided translating distributor
...Supply line traversing means
...Wheel mounted for rotation about longitudinal axis of pipeline
...Longitudinal movement of pipeline
...Propelled or guided translating distributor

 Propelling means
....Reel take-up
....Intermittent grip or inching type
....Fluid motor or spray fluid operated
....Supply line traversing means
....Hydrant coupling
..Track or guideway
...Overhead type
...Reciprocating
....With extensible support
...Jet directed toward or along supporting surface (e.g., lawn rakes)

DISTRIBUTOR HAVING OVERFLOW DISCHARGE (E.G., WEIR TYPE)
..Escape to fluid conveying current

FLEXIBLE FLOW LINE OR OUTLET STORAGE OR RETRIEVAL MEANS
..Flow control responsive to flow line, outlet or storage means movement
..With retrieval facilitating means
..Reel and ground supported frame

WITH FIXED SUPPORT FOR OR GROUND INSTALLED SUPPLY MEANS (E.G., STATIC CONSTRUCTIONAL INSTALLATIONS)
..Embedded or buried sprinkler
..Street curb installed
..With sprinkler head elevating means
...Elevating means responsive to flow of spray fluid
....With spring assisted retraction
....Distributor continuously moves during spraying
...Multiple spray heads connected for serial flow
..Building features
..Overhead or ceiling mounted supply conduit
..Moving (non-ground traversing) distributing means

SIMULATIONS
SLINGER OR SPLASHER; OR DEFLECTOR ROTATED RELATIVE TO EFFLUENT
...With addition of other fluid downstream of distributor
....Distributor motion caused by fluid flow

January 2012
214.15 Plural fluid outlets from distributor
214.17 With combining of fluids and subsequent distribution
214.19 One of relatively axially movable concentric flow paths continuously rotating
214.21 With pump or interior guide vanes for fluid
214.23 ...Adjustable or deformable
214.25 With combining of diverse fluids at or upstream of distributor
215 With separate pump or movable conveyer means delivering to distributor
216 ...Bowl-like rotating sleeve conveyer
217 ...And scoop delivering to distributor
218 ...Endless belt conveyer
218.5 ...Screw or spiral conveyer
219 ...Slinger or splasher dipping into or immersed in supply
220 ...Horizontal axis rotary distributor
221 ...Submerged impeller type splasher or slosher
222 ...Spray apertured casing spaced about distributor
222.11 Nozzle delivers fluid to deflector
222.13 ...Nozzle continuously moves
222.15 ...Deflector causes movement
222.17 ...Fluid actuated deflector
222.19 ...Plural streams to unitary deflector
222.21 ...Eccentrically mounted
223 ...Disc impeller type or bowl-like slinger or deflector
224 ...Disc or impeller type
225.1 DISTRIBUTOR CONTINUOUSLY MOVES RELATIVE TO SUPPORT DURING SPRAYING
226 ...With supply holder or plural substance mixing
227 ...Compound motion of distributor or terminal member about plural axes
228 ...Sediment collector or internal diverter baffle
229 ...Wriggler or flexible distributor
230 ...With impact motive means
231 ...Including deflector
232 ...Movable during operating cycle for pattern control
233 ...Deflector causes movement of distributor
236 ...With undulating or irregular cam track for noncircular pattern control
237 ...Spray fluid motor drive means (not reaction)
238 ...By weight of accumulated fluid
239 ...Continuously operative rectilinearly reciprocating motor
240 ...Rotary motor drive (e.g., turbine type)
241 ...With step-by-step advance motion
242 ...Reciprocating or oscillating distributor
243 ...Multiple distributors supported for relative motion or on different axes (one may be stationary)
244 ...One distributor drives another
245 ...Coaxially arranged distributors
246 ...Distributor with diversely shaped or oriented terminal members or outlets
247 ...Adjustable or shiftable terminal member
248 ...Groups of terminal members or outlets spaced along axis of rotation
249 ...Circumferentially alternating diverse terminal members or outlets
251 ...Reaction-type nozzle motive means
252 ...With brake, lock or retarder
253 ...Terminal members adjustable simultaneously or radially swinging
254 ...Filter bed type or fluid seal
255 ...Oscillating or reciprocating distributor
256 ...Control of speed or axis of rotation shiftable (manual valves excluded)
257 ...Variable outlet aperture size
258 ...Varying jet to change tangential reaction component
259 ...With binding preventing means or seal
260 ...Distributor vibrating or jarring means
261 ...Support details for moving distributor
262 ..With flow controller
263 .Fluid motive means
263.1 .Electric motive means
263.2 .Power takeoff from another device
263.3 .Transmission details
264 .Support details for moving distributor
265 ..Adjustable standard or support
265.11 REACTION MOTOR DISCHARGE NOZZLE
265.13 .With retractable noise suppressing stream divider
265.15 .With erodible, frangible or fusible nozzle part
265.17 .With addition of secondary fluid upstream of outlet
265.19 .With means controlling amount, shape or direction of discharge stream
265.23 ..Fluid jet for stream deflection
265.25 ..Plural controlled outlets
265.27 ...Selective total discharge through diversely shaped or directed outlets
265.29 ....Controller moves into fluid path from position closing one outlet
265.31 ....Axially moved discharge portion opens side outlet
265.33 ...Radially outermost flow defining wall adjustable
265.35 ...Nozzle aiming adjustable
265.37 ...Radially inwardly movable wall
265.39 ....At least three pivoted flaps form outlet
265.41 .....With adjustable upstream flow path portion
265.43 ....Resilient or deformable wall
266 TERMINAL OUTLET MEANS CONNECTED IN SERIES FOR THROUGH FLOW
267 .Terminal outlet means in or on flow line coupling
268 .With casing or support
269 .With flexible or articulated flow line section
270 NOZZLE WITH AIR SUPPLY MEANS TO OPERATOR
271 WITH NOZZLE OR FLOW LINE ATTACHED PENETRATING MEANS
272 .Piercing connection to supply means
274 WITH MEANS OPERATED BY ART DEVICE
284.1 LIQUID SPRAYER FOR TRANSPARENT PANEL (E.G., WINDSHIELD)
284.2 .Headlamp

WITH GROUND OR VERTICAL SURFACE SUSTAINED SUPPORT MEANS
273 .Support and deflector unit forms base for supply conduit or terminal outlet member
275 ..Support and deflector unit forms base for supply conduit or terminal outlet member
276 .Ground or object penetrating support
279 .Supply passage configuration forms stand
280 .Pole, stand or extension carried head
280.5 ..Adjustable support
281 ...Extensible
282 .Wall or bracket mounting
283 ..Bracket or bracket mounting
285 .Flow controller and ground support interconnection

WITH SOLID MEANS AS GUARD OR PROTECTOR
288 ..Bumper or guard protects distributor
288.3 .Bumper or guard protects distributor
288.5 ..Arcuate or circular

COMBINED OR CONVERTIBLE INCLUDING SUPPLEMENTAL GAS SHAPING OR SHIELDING JET
289 .Air shield surrounds projected airstream (i.e., air gun)
290 .Angularly adjustable as to point of convergence
291 .Gas-driven rotatable jet orifice carrier
292 .And additional downstream liquid nozzle
293 .On one side only of spray orifice
294 .Plural sets of gas jet orifices
295 ..One or more sets selectively usable
296 .Jets coupled to turn stream about longitudinal axis
297 .Noncircular supplemental orifice (e.g., special shape)
298 .Adjustable gas flow directing or controlling means
299 .Rotatable port-carrying member effects flow control

INCLUDING SUPPLY HOLDER FOR MATERIAL
300 ..Plural holders for diverse materials
301 .Two or more spray-material holders
302 ...Choice of any one material only
303 .And mixing beyond outlet
...And carrier fluid supply
...Holder for carrier fluid
...And frangible seal rupturing means
...To be mixed, dissolved or entrained in a flowing liquid stream prior to discharge
...Gas addition upstream of spray nozzle outlet
...Diverse discharge outlets for mixed and unmixed fluids respectively
...Follower-type holder and stream egress means in juxtaposition
...Mixing beyond liquid stream outlet
...Holder within terminal element carrying member
...Unitary outlet means and holder
...Branching flow and recombining in terminal member
...Aspiring discharge nozzle
...Moving solid surface supplying material beyond carrier fluid outlet
...Follower in holder
...Floating or biased piston
...Fluid pressure actuated
...Collapsible or flexible follower (i.e., non-rigid)
...Screw actuated
...Conveyor for fluent solid in holder
...Temporary storage in wick or pad
...Resilient holder wall
...Collapsible or foldable supply holder
...Moving solid surface engages material to be sprayed
...Diaphragm and flexible wall gas pump combined
...Enclosing casing about moving surface
...Motor-operated
...Separable pump with holder mount or securing means
...Articulated or plural point ingress to pump
...Three or more spray fluids (e.g., induction of ambient air)
...One a fluent solid
...Fluid pressure discharge means
...Material atomized in holder (e.g., nebulizer)
367 ....Unitary mounting for pressure fluid inlet and liquid outlet
368 ....Air and liquid flow paths combine upstream of spray outlet
369 ....Air and liquid flow paths combine upstream of spray outlet
370 ....And baffle, diffuser or flow separating means (i.e., nebulizer)
371 ....Concentrically arranged flow paths
372 ....Gas passage from gas space in holder through fluid outlet means
373 ....Means to pressurize contents of holder
374 .Hand-manipulable shaker or jiggler type
375 .Including handle or handgrip for supply container and attached outlet
376 ....Gravity discharge hand carried
377 ...Upending or tilting for discharge
378 ....Handle grip and flow controller juxtaposed
379 .Gravity flow from holder (e.g., hopper type)
380 MOTOR OR SPRAY FLUID OPERATED CONTINUOUSLY MOVING DISCHARGE MODIFIER
381 .Spray fluid operated
382 ..Deflector or whirler
383 ....Rotating whirler
384 ....Pivoted on axis transverse to flow
385 PLURAL INTERCHANGEABLE DISCHARGE MODIFIERS, OUTLET ARRANGEMENTS OR COUPLING MEANS
386 ..Selectively arrangeable outlet means
387 .Movably mounted multi-terminal outlet carrying member
388 ...Member rotates on axis transverse to flow path
389 ...Member rotates on axis longitudinally of flow path
390 ...Member reciprocates transversely of flow path
391 .Discharge modifier upstream of terminal outlet
392 SELECTIVE COUPLING MEANS FOR HEAD OR NOZZLE
393 .Including whirler device to induce fluid rotation
394 ..Three or more fluids
395 ..Axially adjustable valve with fluid conducting stem
396 ..Plural serially arranged whirlers for same or for mixed fluids
397 .Adjustable or selective whirl inducing means
398 .Whirling of fluid prior to or at point of addition of second fluid
399 ...Discrete whirler means for each fluid
400 .Fluid in outer of concentrically arranged paths is whirled
401 ....Mixing at or downstream of terminus
402 .And valving means controlling flow for combining
403 ..By terminal ejection valve
404 ...Liquid storage means proximate to ejection outlet
405 ....Fluid pressure operated valve (mixed or unmixed)
406 ....By gas pressure
407 ..Motor or fluid pressure operated valving means
408 ...Multiway valve or single operator for plural valves
409 ...Relatively movable concentric flow paths effect valving
410 ...For three or more diverse fluids
411 .Plural valves for same fluid
412 ...Parallel
413 .Concentric flow paths
414 ...Concentric flow paths
415 ...Relatively movable flow paths
416 .Plural valves for central fluid
417 .Valving means for central fluid
418

January 2012
...Discrete flow paths for diverse fluids

At or beyond outlet

With partial preliminary mixing

Two of three disparate fluids premixed

Induction of ambient air

Including movable means for varying point of convergence

Including peripheral or annular outlets at junction of opposed coaxial fluid paths

Combining of three or more separate fluid streams

Concurrent or concentric flow means

Flow means of one fluid surrounds the other at outlet

Plural passages discharge one fluid to other

To outer fluid at outlet

Ambient air aspirated through inner flow path

Streams meet at right angles

Serially arranged mixing zones (i.e., of same or mixed fluids)

Additions of fluid in zones spaced along flow path

At least three separate fluids

Combining of three or more separate streams

Liquid flow induces atmospheric air (e.g., faucet aerator)

Plural inlets to one stream from another

Three or more inlets to one stream from other

Normal to entered stream

Including additional dispersing plate or obstruction in mixing chamber

Fluid streams have angular junction

Streams meet at right angles

One fluid discharges into other in concentric conical portion of outer conduit

VALVED FAUCET HAVING CONTRACTING CHAMBER JET FORMING MEANS

SELECTIVELY USABLE OR VARIABLE DIVERSE TERMINAL OUTLETS

Outlet formed between parts mounted for relative movement

Axially movable component

...Deflector and outlet forming means combined

...Two or more concentric annular outlets

...Central and concentric annular outlets

By selection of coupling means

Valving means for each flow path

Valved faucet with selective terminal flow paths to discharge (e.g., high or low velocity draft cocks)

Integral or rigidly interconnected valving means

At least one flow path always open

Central flow path

...And surrounding ports

ADJOINED CONTIGUOUS ELONGATED SPRAY CONDUITS (E.G., PARALLEL CONDUITS)

TERMINAL OUTLET FORMED BETWEEN PARTS MOUNTED FOR RELATIVE MOVEMENT

Spray fluid pressure responsive discharge modifier

Axially reciprocating closure deflector-type modifier

Gravity seated tapered plug

Laterally movable outlet part

Axially movable outlet part

Moved by rotatable flow conducting terminal member part

Radially outer and axially movable part

Spring biased nonrotatable controller within discharge guide

Peripherally fluted or grooved member

FLOW DEFLECTING OR ROTATION CONTROLLING MEANS

And filtering or screening means

Fluid rotation inducing means upstream of outlet

And fluid pressure responsive flow modifying means

And adjustable flow modifier requiring separate insertable tool

Serially arranged whirlers
...And serially arranged deflector
...Whirl chamber transversely offset to single inflow path (i.e., tangential inflow)
...Having a central post-like member
....And flow passage in post
...Having valved inlet
...Peripheral and central flow paths in whirler upstream of single terminal outlet
...Coaxial valving means and central port
...Annular egress outlet formed between whirler and casing
...And centrally ported whirler
...Having flow modifier and external operator therefor carried by nozzle
...Selective diverse paths to or through terminus
....One path avoids whirler action
....Adjustable between positional limits
......Relatively axially movable flow modifier
.......Rotary, axially movable
...Axially aligned nozzle, modifier and stem
....Slotted, ported or grooved modifying member
.....Member having rotary motion for adjustment
......And motion longitudinally of the axis of rotation
...Single planar spiral perpendicular to flow path
...Axially extending spiral-type flow passage or diverter
...Having a solid core
...In or on flow-passage walls
...Integral whirler and terminal head (e.g., terminal nut)
....Apertured cap surmounts whirler organization
...Whirler is cup-like insert with tangential inlets
...Downstream end of core member slotted to form whirl passages
...Whirler is slotted or apertured flat disc or plate
....Deformed plate
....Slot in disc face

...Multiple angular passages through disc
.Unitary deflector with multiple fingers or serrated edges
.Chamber-like deflector
.Serially arranged deflecting surfaces
.Surfaces of spiral or helical form
.Plural deflectors arranged edgewise to stream
.Pivot into and out of discharge path
 Deflector apertured for flow
.Deflector movably or removably mounted relative to outlet
.Deflector is closure
 Mounted for movement into and out of deflecting position
.Bail-type pivoting means
...Plate means oblique to or on one side of flow path
.Exteriorly arranged of flow member
.Rotated into deflecting position
.Positioned transversely across flow path
.Adjustable to alter degree of deflection
.Axially movable deflector
.Supported exteriorly of flow outlet
.Resilient securing means
.Spring form deflector
.Deflector and terminal flow element
.Resilient or deformable
.Plural outlets to deflector
.Deflector on one side of flow path
.Multiple or discrete deflecting surfaces
.Dished or arcuate deflector
.Transverse planar or dished surface type

.FLOW LINE OR NOZZLE ATTACHED OR CARRIED HANDGRIP OR HANDLE
.Pistol grip type
.Single trigger for plural valve actuators
...For sequentially opened valves
.Finger- or hand-attached or worn (e.g., spray glove)
.Sleeve-type grip

January 2012
And hook-like holder
Spray pole type

**FLUID PRESSURE RESPONSIVE DISCHARGE MODIFIER** or flow regulator*

Fuel injector or burner
..Having flow regulator* for reciprocating piston engine

...With means to vary or pulse flow within engine cycle

....Upstream of flow regulator*

...Manually adjustable

...Regulator* upstream of outlet port opens in direction of flow

...Regulator* biased to closed position by a fluid

...Spring type or biased regulator*

...With antifriction, guide or seal means for flow regulator*

...With discharge modifier*

..Resilient or deformable terminal outlet

..Outlet carried by or formed in a disc

**SIMILAR TERMINAL MEMBERS IN MULTIPLE ARRANGEMENTS**

**TERMINAL MEMBER AND VALVE PART MOVE AS UNIT**

...Rotatable unit

...Having axial movement

...Disc type

...Axially movable unit (reciprocating)

**CONDUIT OR NOZZLE ATTACHED IRRIGATION-TYPE DECELERATOR**

**ONE FLUID STREAM IMPINGES UPON ANOTHER (I.E., CONVERGING)**

..Orifices in recessed face

..Directly opposed outlets

**INCLUDING MEANS MODIFYING DEFORMABLE TERMINAL OUTLET DISTRIBUTOR OR NOZZLE IN CIRCUMFERENTIAL WALL OF FLEXIBLE SUPPLY LINE**

**UNITARY PLURAL OUTLET MEANS**

...Plural outlets each supplied by different fluid

...Plural separable nozzles on spray pipe

...And flow control for each nozzle

Insert at terminus forms plural streams

Having interior filter or guide

..Foraminous or apertured member

..Plural fluid directing means

..Axial or superposed members arranged to form axially spaced outlets

..Stacked plates

..Arranged in plural groups or rows

..All groups identical

..Concentric or coaxial groups

...In concavo-convex face

..Three or more dissimilar groups

..Three or more dissimilar outlets

..And flow regulation or control of outlets

..Sequential control of outlets

..Bi-dimensional control

..Branched flow line type

..All in a single straight line

..All in a concavo-convex face

..Slit or slot-like apertures

**INCLUDING VALVE MEANS IN FLOW LINE**

..Line fluid operated

..Flow direction responsive valve

..Downstream flow to outlet closes valve

..And fluid to gas expansion effecting means (e.g., aerosol type)

..Serially arranged valves (e.g., trap or wet flow line)

..And filter, sifter or screen

..Flexing flow conduit or sheath unseats valve

..Unhinged tilting type

..Relatively movable remotely arranged operator for controller (e.g., Bowden wire)

..Movable terminal flow member controls valve

..Requiring separate insertable tool for adjustment

..Rotary valving

..Including axial movement

...Stem or operator extends through flow conduit

..Reciprocating

..Injection nozzle type

...Electromagnetically operated valve (e.g., ball-type)
585.2 ....With separate operator therefor
585.3 ....Plate-type armature valve
(e.g., plate and integral projection or ball)
585.4 ....Elongated armature with integral projection
585.5 ......Needle-type projection
586 ......Transverse to flow path
587.1 TERMINAL MEMBER ADJUSTABLY OR SHIFTABLY CONNECTED TO FLOW CONDUIT
587.2 ....Plural distinct articulation type flow connections
587.3 ..Includes ball and socket
587.4 ..Ball and socket flow connection
587.5 ..Pivot type flow connection
587.6 ..With pin in pivot type connection
588 ..Flexible coupling section
589 RIGID FLUID CONFINING DISTRIBUTOR
589.1 ..Fluidic oscillator
590 ..Having interior filter or guide
590.3 ..Foraminous or apertures member
590.5 ..Plural fluid directing means
591 ..Including flow passage liner
(e.g., wear liner)
592 ..Flat and tapered
593 ..One wall only tapered to direction of flow
594 ..And remaining opposite side walls converging
595 ..And superposed curved discharge edges
596 ..Orifice in separable disc or plate
597 ..Elongated orifice in terminal member
598 ..Oblique to direction of flow
599 ..Oval or elliptical
600 ..Assembly or disassembly feature
601 ..Orifice shapes
602 MISCELLANEOUS (E.G., RESILIENT NOZZLE)

FOREIGN ART COLLECTIONS

FOUR 000 CLASS-RELATED FOREIGN DOCUMENTS

DIGESTS

DIG 1 PATTERN SPRINKLER
DIG 2 SCARFING TORCHES
DIG 3 FLUID AMPLIFIER
DIG 4 "O"-RING
DIG 5 BALL AGITATORS
DIG 6 LAWN MOWER
DIG 7 COANDA
DIG 8 CUTTER SPRAYER
DIG 9 SLIDE FASTENER
DIG 10 CARBON DIOXIDE BULB
DIG 11 MAGNETS
DIG 12 FLEXIBLE OUTLETS
DIG 13 SOOT BLOWERS AND TUBE CLEANERS
DIG 14 PAINT SPRAYERS
DIG 15 SPRINKLER SYSTEMS WITH CONTROLS
DIG 17 LOW VOLUME
DIG 19 NOZZLE MATERIALS
DIG 21 AIR BLAST
DIG 22 SAFETY AIR NOZZLES
DIG 23 SCREENS

CROSS-REFERENCE ART COLLECTIONS

900 ELECTROMAGNETICALLY ACTUATED FUEL INJECTOR HAVING BALL AND SEAT TYPE VALVE

January 2012