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**533.2 Fuel injector or burner:**

This subclass is indented under subclass 533.1. Device wherein the outlet port of the terminal member is in communication with, and conveys a fluid fuel to a combustion chamber.

**533.3 Having flow regulator\* for reciprocating piston engine:**

This subclass is indented under subclass 533.2. Device wherein the flow changing means is a flow regulator and the combustion chamber is that of a reciprocating piston engine, the flow regulator functioning in timed relationship with the cycle of operation of the engine.

**533.4 With means to vary or pulse flow within engine cycle:**

This subclass is indented under subclass 533.3. Device having additional means to (1) alter or vary the amount of discharge automatically within a single engine cycle, (2) provide multiple, discrete discharges within a single engine cycle, or (3) any combination of (1) and (2) above.

**533.5 Upstream of flow regulator\*:**

This subclass is indented under subclass 533.4. Device wherein the means to vary or pulse flow is located upstream of the flow regulator.

**533.6 Manually adjustable:**

This subclass is indented under subclass 533.3. Device wherein an operating specification of the flow regulator can be manually set to a desired value.

**533.7 Regulator\* upstream of outlet port opens in direction of flow:**

This subclass is indented under subclass 533.3. Device wherein the flow regulator is a valve located upstream of the fluid outlet; and it is responsive to, and opens in the direction of the fluid flow.

**533.8 Regulator\* biased to closed position by a fluid:**

This subclass is indented under subclass 533.3. Device having a secondary source or path of fluid pressure to which the regulator responds, such secondary pressure acting to urge the regulator in a direction (usually closed) opposite

that of the primary fluid. The secondary fluid may be the same fluid as the primary fluid but acting through a different path.

**533.9 Spring type or biased regulator\*:**

This subclass is indented under subclass 533.3. Device wherein (a) the flow regulator comprises a body of resilient, deformable material, or (b) the regulator is biased to a discharge preventing position by a resilient biasing means having a particularly defined structure or operating characteristic.

- (1) Note. Part (b) of this definition requires that the resilient biasing means consists of more than a simple coil spring of indeterminate specifications.

**536 SIMILAR TERMINAL MEMBERS IN MULTIPLE ARRANGEMENTS:**

This subclass is indented under the class definition. Apparatus comprising plural, substantially identical, discrete terminal members arranged with respect to a common support means.

- (1) Note. Branched flow lines with integrally formed outlets or separably carried outlet elements wherein by the arrangement disclosed there is no relative movement possible between the outlets are excluded from this group and are found in subclasses 548+ below.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 266+, for plural longitudinally spaced outlets in a flow line conduit and see the search notes thereto for other spaced outlet arrangements.  
 390, for plural interchangeable outlet arrangements.  
 436+, for selectively usable or variable diverse terminal outlet means.  
 450, for a plurality of tubular members extending side-by-side and connected together along their length and provided with outlet means.  
 548+, for unitary plural outlet means.

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

This subclass is indented under the class definition. Apparatus wherein the fluid egress carrying member is unitarily provided with a flow quantity regulating means and which partake of the same motion for reason of adjustment or control.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

579, for valving means controlled by the relative motion of the terminal member and some connecting or operating linkage.

SEE OR SEARCH CLASS:

251, Valves and Valve Actuation, appropriate subclasses for valves and actuators therefor in the absence of claimed nozzle detail or relationship.

**538 Rotatable unit :**

This subclass is indented under subclass 537. Apparatus in which the flow egress carrying member is capable of turning motion about an axis.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

392+, for movably mounted multi-terminal outlet carrying members.

**539 Having axial movement:**

This subclass is indented under subclass 538. Apparatus in which the rotatable unit also has movement in the direction of the axis about which it turns.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

458, for axially, rotary outer flow member in which the outlet is formed by parts mounted for relative movement.

**540 Disc type:**

This subclass is indented under subclass 538. Apparatus in which the valve part takes the form of a disc which rotates against a flat surface to block or permit flow.

**541 Axially movable unit (reciprocating):**

This subclass is indented under subclass 537. Apparatus in which the terminal member is constrained to move in a back and forth manner in the direction of its major axis.

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

This subclass is indented under the class definition. Apparatus comprising in general a chamber which receives a relatively rapidly flowing fluid from a flow line and slows down the velocity of the fluid by providing an increased number and effective area of egress ports or escape routes, as compared to the area of the fluid inlet, or an increase in at least a portion of the flow line or chamber.

(1) Note. Flow through the decelerator results in a dissipation of pressure; however, without having any particular effect upon the volume.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

548+, for other unitary plural outlet means, particularly subclass 553 for elements within a nozzle tending to decelerate flow.

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

This subclass is indented under the class definition. Apparatus having two or more outlet means so arranged as to cause one of the resulting fluid streams to intersect with the other so that combining takes place at or beyond the outlet means.

(1) Note. This locus is residual for the dividing and recombining of a single fluid wherein the recombining takes place at or beyond the terminus. For upstream dividing and recombining see particularly the art concerned with the whirling of fluids.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

31, for bubble cups or drinking fountains having converging jets.

306, for plural holders for diverse materials with mixing beyond the outlet.

- 314+, for mixing exteriorly of liquid flow paths of material to be mixed, dissolved or entrained in a flowing liquid stream.
- 379, for supply holders for material with gravity flow to a conveying fluid.
- 418, for combining of separately supplied fluid streams at or beyond the terminus.
- 461+, particularly subclasses 498, 500+ and 504, for plural streams caused to converge beyond the outlet means by specially arranged or shaped deflectors.
- 536, for plural heads unitarily arranged which may be set to cause convergence of the emitted fluid streams.
- 548+, for unitary plural outlet means.
- 544 Orifices in recessed face:**  
This subclass is indented under subclass 543. Apparatus having the outlets positioned in a reentrant face of the terminal member.
- 545 Directly opposed outlets:**  
This subclass is indented under subclass 543. Apparatus wherein the outlet means are in line and directly opposite each other.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
421, for plural fluids mixed at the junction of opposed coaxial fluid paths.
- 546 INCLUDING MEANS MODIFYING DEFORMABLE TERMINAL OUTLET:**  
This subclass is indented under the class definition. Apparatus comprising an egress means fashioned from resilient material readily capable of change by distortion or flexure without permanent deformation and having associated means for effecting distortion thereof.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
265.43, for a reaction motor discharge nozzle having a resilient or deformable wall and means to bend the wall to various shapes.
- 451+, particularly subclass 455 for outlet means formed by parts mounted for relative motion including resilient type parts; however, hingedly, swingably, slidably or otherwise articulated to modify the outlet.
- 602, for resilient or deformable terminal members not provided with means for causing deformation.
- 547 DISTRIBUTOR OR NOZZLE IN CIRCUMFERENTIAL WALL OF FLEXIBLE SUPPLY LINE:**  
This subclass is indented under the class definition. Apparatus comprising a pliable or deformable supply conduit having at least one distributor protruding outwardly from the side wall, i.e., the wall which extends parallel to the flow axis.
- (1) Note. Patents classified herein usually have a disclosure that the supply hose may be perforated at any desired point and the outlet member may then be installed or assembled at said point.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
588, for a distributor or terminal member connected at one end of a flexible conductor, the other end of which is connected to a fluid conduit.
- 548 UNITARY PLURAL OUTLET MEANS:**  
This subclass is indented under the class definition. Apparatus having two or more final discharge outlets or egress openings leading from the terminal section of the flow path which are structurally related or operatively restrained for motion together and capable of permitting simultaneous discharge.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
398+, especially subclasses 418+ for plural outlet means related to the mixing of separately supplied fluid streams.
- SEE OR SEARCH CLASS:  
601, Surgery: Kinesitherapy, particularly subclasses 160+ for a device or method therefor which may be structurally similar to a Class 239 type spray device which provides medical treatment to the body for a named ailment or injury thereof. Generic terms such as "treatment", "therapy", "massage", "hydrotherapy", "hydromassage", etc. are to be interpreted broadly for placement in Class 239

lacking a disclosed body treatment for a named medical condition or physical injury. Exceptions to this rule comprise generically disclosed and claimed hydrotherapy of the genitalia or any internal body tissues, or a device for applying a force which imparts a specific motion to the body or portion thereof which shall be classified in Class 128 or one of its 600 series trailer classes as provided for therein.

**549 Plural outlets each supplied by different fluid:**

This subclass is indented under subclass 548. Apparatus wherein distinct paths to discrete outlet means are provided whereby separate or different fluids may be discharged therefrom.

SEE OR SEARCH THIS CLASS, SUB-CLASS:  
77, 290+, 302+, 418+, and 543+, for other arrangements of plural outlet means supplied by plural fluids.

**550 Plural separable nozzles on spray pipe:**

This subclass is indented under subclass 548. Apparatus which includes a plurality of terminal outlet means spaced along the length of a supply pipe and disclosed as removably secured thereto.

SEE OR SEARCH THIS CLASS, SUB-CLASS:  
547, for similar nozzles spaced along a flexible supply conduit.

**551 And flow control for each nozzle:**

This subclass is indented under subclass 550. Apparatus which include individual means to vary the rate of efflux of fluid through each of the plural nozzles.

**552 Insert at terminus forms plural streams:**

This subclass is indented under subclass 548. Apparatus in which plural outlets are formed by means placed within and extending upstream from a single outlet means to cause the effluent to be divided or to be led into separate streams upon discharge beyond said outlet means.

- (1) Note. The subject matter of this subclass is distinguished over that in subclass 553 below on the basis that herein the insert actually forms the equivalent of plural outlet means and discharge would be in plural streams regardless of the presence or absence of a guide means.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

543+, for means causing plural streams to impinge upon each other downstream of the terminus.

**553 Having interior filter or guide:**

This subclass is indented under subclass 548. Apparatus in which a means is provided upstream of the discharge outlets to (1) hold back or separate material from the system fluid, or (2) spread out or otherwise direct the fluid prior to or during egress from the discharge outlets.

- (1) Note. The interior filter or guide must be in addition to the parts forming the outlets, i.e., it must be part of or in the plural outlet carrying member. Ribs formed on the walls forming the outlet are considered to be included under this definition.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

76, for systems in which the flow equalization means or distributor is remotely positioned from a plurality of separate outlet arrangements, and see (1) Note therein.

214.21+, for means inducing spin or whirl of any fluid stream in a system in which one fluid is mixed with another fluid downstream of a continuously moving distributor which has discharged one of said fluids.

450, for plural outlets arranged in adjoined, contiguous flow line sections with one wall or the like common to the plural flow lines.

461+, for other terminal members in which the interior guide acts to control rotation of the fluid.

552, and see (1) Note therein.



590+, for a terminal member having a single egress outlet and an interior filter or guide.

**553.3 Foraminous or apertured member:**

This subclass is indented under subclass 553. Apparatus in which the means comprises a member or material having one or more orifices, pores, or passages extending there-through.

SEE OR SEARCH THIS CLASS, SUBCLASS:

462, for a distributor having fluid deflection or rotation controlling means and a filter or screen.

575, for a distributor having valve means and a filter or screen in the flow line.

**553.5 Plural fluid directing means:**

This subclass is indented under subclass 553. Apparatus comprising a plurality of distinct and separate fluid directing surfaces (e.g., guide vanes or grooves).

**554 Axial or superposed members arranged to form axially spaced outlets:**

This subclass is indented under subclass 548. Apparatus in which a plurality of members are axially arranged or superposed to result in at least two axially spaced discharge outlets for the fluid.

(1) Note. For purposes of this subclass members nested or telescoped in each other and so arranged that the streams are released from or between the members in a plurality of parallel planes are considered to qualify.

**555 Stacked plates:**

This subclass is indented under subclass 554. Apparatus in which the superposed or axially joined members are plates placed in face-to-face relationship with the spaces between the plates forming the outlets.

(1) Note. Members which are planar for at least a portion of their surface and also have offset rims are considered to be plates for this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

595, for flat and tapered terminal members having superposed curved discharge edges.

**556 Arranged in plural groups or rows:**

This subclass is indented under subclass 548. Apparatus in which the outlets are distributed in at least two sets or arrangements of at least two apertures each.

(1) Note. A group of outlets is considered to consist of (1) at least two apertures which when viewed relative to the remaining ones reveals a repetitive pattern or arrangement, or (2) sets of apertures arranged about a center. Groups may vary from each other in some essential characteristic such as number, size, shape, etc., of openings or in the placement thereof about some axis or center. There must be at least 4 openings (two groups) to qualify for this and the indented subclasses.

SEE OR SEARCH THIS CLASS, SUBCLASS:

543+, for plural groups of outlets causing convergence of the discharged streams.

**557 All groups identical:**

This subclass is indented under subclass 556. Apparatus in which each group of outlets is the same as all other groups.

(1) Note. Included herein are terminal outlet means having substantially identical spray pipes each having a row of outlet apertures extending therethrough, said pipes being connected to or integral with a fluid header conduit or manifold (e.g., spray pipes extending parallel to each other or radially of the manifold).

(2) Note. Identical openings or groups refer to aperture size, shape and spacing about some central point.

**558 Concentric or coaxial groups:**

This subclass is indented under subclass 556. Apparatus in which the groups of outlets are arranged around a common center or axis.

- (1) Note. If the groups, either by illustration or disclosure, can in any way be considered to form coaxial or concentric groups, classification as original or cross-reference in this or the indented subclass is indicated.

**559 In concavo-convex face:**

This subclass is indented under subclass 558. Apparatus in which the concentric or coaxial groups are formed in a concavo-convex face or wall. (See subclass 567 for definition of concavo-convex face).

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 567, for other outlet arrangements in a concavo-convex face or wall.

**560 INCLUDING VALVE MEANS IN FLOW LINE:**

This subclass is indented under subclass 556. Apparatus in which there are at least three groups of outlet openings, each group differing from the others in some essential characteristic relating to flow.

- (1) Note. See (1) Note to subclass 556 above.

**561 Three or more dissimilar outlets:**

This subclass is indented under subclass 548. Apparatus in which the terminal member is provided with at least 3 outlets of different size or shape.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 436+, for selectively usable or variable diverse terminal outlets.

**562 And flow regulation or control of outlets:**

This subclass is indented under subclass 548. Apparatus in which means are provided for regulating or varying the amount of fluid to or issuing from the outlets either individually or simultaneously.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 265.25, for a reaction motor discharge nozzle with plural outlets and means to control the amount of fluid issuing from the outlets either individually or simultaneously with at least one other.  
378, for supply holders and attached outlet having unitary plural outlet means.  
443+, for valve controlled plural diverse terminal outlets.  
551, for removable spray pipe nozzles having individual flow control means for each nozzle.

**563 Sequential control of outlets:**

This subclass is indented under subclass 562. Apparatus including movable means which sequentially or serially open and close one or more of a plurality of outlets.

- (1) Note. These devices include one or more rows of outlets in which longitudinal and/or rotary motion of the means sequentially opens or closes one outlet or a row of outlets at a time.

**564 Bi-dimensional control:**

This subclass is indented under subclass 563. Apparatus provided with means to vary the total effective length and total effective width of all or part of the outlets.

- (1) Note. These devices usually include a valve device which opens or closes one or more of a plurality of outlets sequentially or serially in its movement together with means which opens or closes other outlets in a plane normal to the first mentioned control. These controls may comprise a single valve means which is mounted for longitudinal and rotary motion or separate means mounted for such longitudinal and rotary motion.

**565 Branched flow line type:**

This subclass is indented under subclass 548. Apparatus in which the flow line divides into a plurality of flow paths, each said flow path having one or more outlets.

- (1) Note. The separated or branched flow paths may subsequently be recombined so as to form a circuit or loop from either of the branched paths back to the inlet therefor.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

450, for similar systems in which the branches are capable of being coupled to similar sections for lengthening thereof and in which the separate branches are not recombined.

**566 All in a single straight line:**

This subclass is indented under subclass 548. Apparatus in which the plural openings extend along a straight line lying entirely within the surface of the terminal outlet member.

- (1) Note. This subclass is residual with respect to subclass 266 and contains a collection of what has come to be known as terminal flow line members characterized by their being readily manipulable, or by apertures being unitarily arranged in a terminal flow member. The presence of a handle or arrangement for manipulation is a good indication for this subclass.
- (2) Note. If the outlets are formed in a tubular conduit, they must lie along the longitudinal axis of the conduit. Outlets formed in a straight line around the curved face will be found elsewhere (see search notes below).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

266+, appropriate subclasses for outlets arranged in a single straight line in members adapted to be longitudinally joined or coupled to each other.

567, for outlets formed in a straight line around the curved face (see (2) Note, above).

**567 All in a concavo-convex face:**

This subclass is indented under subclass 548. Apparatus in which the spray openings extend through a wall which is of concavo-convex

form; i.e., the wall has a curvature about one or more axes (e.g., cylindrical or spherical).

- (1) Note. The perforations in the terminal members must be arranged around the curved wall; e.g., at least two of the said openings must be spaced from each other circumferentially of the member.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

559, for other outlet arrangements in a concavo-convex face or wall and see (1) Note in the definitions of subclass 558.

566, and see (1) Note, above.

**568 Slit or slot-like apertures:**

This subclass is indented under subclass 548. Apparatus in which the outlets, perforations or spray apertures are elongate in only one dimension transverse to the direction of fluid discharge.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

597+, for terminal members having a single elongate or slot-like aperture.

**569 INCLUDING VALVE MEANS IN FLOW LINE:**

This subclass is indented under the class definition. Apparatus having a flow regulating means in the fluid conductor which controls the quantity of fluid flowing through or out of the apparatus.

- (1) Note. Arrangements which operate to vary the flow of material, though incapable of cutting it off entirely, are included.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

265.19, for a reaction motor discharge nozzle having means to control the amount of fluid discharging from the outlet.

353, 354, for valving means in spray apparatus having a supply holder for the spray material.

407+, for valving means in a distributing apparatus in which a plurality of fluids are mixed.

- 443+, for valving means in a distributor having selectively usable or variable diverse outlets.
- 527+, for a distributing means combined with a handle or handgrip and plural valves having a single control means.
- 551, 562+, for a distributor comprising plural outlets and flow control means.

**SEE OR SEARCH CLASS:**

- 251, Valves and Valve Actuation, appropriate subclasses for valves and actuators therefor without regard to nozzle relationship or detail.

**570 Line fluid operated:**

This subclass is indented under subclass 569. Apparatus wherein the flow controlling means is responsive to the mere flow of fluid at substantially any pressure; that is, there is not required that a particular relatively elevated pressure be obtained before the controller permits flow downstream therefrom, but rather that mere inertia or weight of the part be overcome.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 412, for combining of plural streams involving fluid pressure operated valving means.
- 452+, for fluid pressure responsive discharge modifiers associated with terminal outlet means formed by parts mounted for relative movement.
- 464, for whirlers combined with fluid pressure responsive modifying means.
- 533, for fluid pressure responsive discharge modifiers or flow regulators.

**SEE OR SEARCH CLASS:**

- 137, Fluid Handling, subclasses 511+ for a fluid handling system including a valve of the direct response type.

**571 Flow direction responsive valve:**

This subclass is indented under subclass 570. Apparatus in which the flow controlling means acts in response to the direction in which material flows.

**572 Downstream flow to outlet closes valve:**

This subclass is indented under subclass 571. Apparatus in which flow of fluid toward the egress port causes the valve to move to closing position; e.g., upstream opening and downstream closing by flow of the effluent.

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

This subclass is indented under subclass 569. Apparatus comprising a means defining a chamber-like element along the egress route or a fluid conductor of increasing cross-section for the effluent to permit reduction of pressure and expansion of a liquid to a gaseous or vapor state.

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

This subclass is indented under subclass 569. Apparatus comprising at least two flow controlling means arranged in the flow line at spaced points along the direction of flow.

**575 And filter, sifter or screen:**

This subclass is indented under subclass 569. Apparatus in which there is provided a means to separate out or hold back the oversized particles of the effluent.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 86, for injection nozzles having capillary type feed passages.
- 228, for sediment collector in a distributor continuously moving relative to a support during spraying.
- 326, for supply holders having a pad or wick for temporary storage of material.
- 462, for deflectors or whirlers combined with filtering or screening means.
- 553.3, for distributor having plural outlet means and an apertured member or screen in the fluid line.
- 590+, for terminal members combined with filters or screens.

- 576 Flexing flow conduit or sheath unseats valve:**  
This subclass is indented under subclass 569. Apparatus in which the movement of the flow regulator is controlled by bending or distorting the flow conduit or its outer encasing member.
- 577 Unhinged tilting type:**  
This subclass is indented under subclass 569. Apparatus in which the flow regulator has a tipping or rocking type motion about an area of contact at its seat; however, without being affixed to said seat, but usually held thereto by spring pressure or by the pressure of the fluid.
- 578 Relatively movable remotely arranged operator for controller (e.g., Bowden wire):**  
This subclass is indented under subclass 569. Apparatus in which the movement of the flow regulator is controlled by the relative movement of an actuating means access to which may be had at a point distant from the said regulator.
- SEE OR SEARCH CLASS:  
251, Valves and Valve Actuation, subclass 294 for flexible valve actuators.
- 579 Movable terminal flow member controls valve:**  
This subclass is indented under subclass 569. Apparatus in which the flow regulator is moved into different positions of adjustment by the motion of the terminal portion of the nozzle which latter portion has movement relative its associated parts.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
457+, for rotatable terminal flow members in control of flow regulators and wherein the terminal outlet is formed by parts mounted for relative movement.  
537+, for nozzles having a terminal member and valve part moving unitarily.
- SEE OR SEARCH CLASS:  
251, Valves and Valve Actuation, subclasses 349+ for valve combinations wherein the valve actuator is an inlet means or outlet means.
- 580 Requiring separate insertable tool for adjustment:**  
This subclass is indented under subclass 569. Apparatus wherein a member apart from and external of the flow confining means is required to be inserted into the apparatus to alter a flow regulator upstream of the egress port.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
465, for a flow modifier requiring a separate insertable tool.
- 581.1 Rotary valving:**  
This subclass is indented under subclass 569. Apparatus in which the flow regulating means is constrained to move in a direction about some axis of the said regulating means.
- SEE OR SEARCH CLASS:  
251, Valves and Valve Actuation, subclasses 304+ for rotary valves.
- 581.2 Including axial movement:**  
This subclass is indented under subclass 581.1. Apparatus in which the flow regulating means is additionally constrained to move in line with the rotary axis of the regulating means.
- 582.1 Stem or operator extends through flow conduit:**  
This subclass is indented under subclass 581.2. Apparatus wherein the moving flow regulator has an operating handle, stem or part thereof which extends through the material passage or outlet.
- SEE OR SEARCH CLASS:  
222, Dispensing, subclass 501 for dispensers having a movable outlet element actuator projecting through a discharge guide.  
251, Valves and Valve Actuation, subclass 339 for valve actuating means extending through the fluid inlet or outlet.
- 583 Reciprocating:**  
This subclass is indented under subclass 569. Apparatus in which the flow regulating means partakes of a to-and-fro or back-and-forth motion (including oscillating motion) either in the direction of flow or transversely thereto.

## SEE OR SEARCH CLASS:

251, Valves and Valve Actuation, sub-classes 318+ for reciprocating valves.

**584 Injection nozzle type:**

This subclass is indented under subclass 583. Apparatus in which the flow regulating means is associated with a nozzle of the type disclosed as spraying into a surrounding environment of superatmospheric pressure.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

5, for a method of injecting fuel into a combustion chamber.  
86, through 96, 132+ and 408+, for injection type nozzles with other regulatory or combined features.

## SEE OR SEARCH CLASS:

123, Internal-Combustion Engines, appropriate subclasses, particularly sub-classes 495+ and 590+ for fuel atomizing devices claimed in combination with significant internal combustion engine structure.

**585.1 Electromagnetically operated valve (e.g., ball-type):**

This subclass is indented under subclass 584. Apparatus in which the flow regulating means is operated by electromagnetic means including a coil and movable core (i.e., armature).

## SEE OR SEARCH CLASS:

251, Valves and Valve Actuation, sub-classes 129.01+ for electromagnetic valve structure without regard to nozzle relationship or detail.

**585.2 With separate operator therefor:**

This subclass is indented under subclass 585.1. Apparatus in which the movable core is separate from (i.e., not integral or not rigidly affixed) and pushes against the flow regulating means.

**585.3 Plate-type armature valve (e.g., plate and integral projection or ball):**

This subclass is indented under subclass 585.1. Apparatus in which the movable core is a planar surface having its longest dimension in a direction transverse to its direction of travel.

(1) Note. The planar cores within this subclass may have distinct, integral, or rigidly affixed projections which act as valving.

**585.4 Elongated armature with integral projection:**

This subclass is indented under subclass 585.1. Apparatus in which the movable core has the longest dimension in its direction of movement and has a protrusion rigidly affixed thereto or formed on the core and extending in the direction of core movement which acts as the flow regulating means.

**585.5 Needle-type projection:**

This subclass is indented under subclass 585.4. Apparatus in which the protrusion is a narrow pointed formation.

**586 Transverse to flow path:**

This subclass is indented under subclass 583. Apparatus in which the flow regulating means moves in a plane generally at right angles to the flow path.

**587.1 TERMINAL MEMBER ADJUSTABLY OR SHIFTABLEY CONNECTED TO FLOW CONDUIT:**

This subclass is indented under the class definition. Apparatus having joint means to change the relationship of the terminal outlet and connected flowline to adjust the position or to vary the direction of the terminal outlet.

(1) Note. Include herein are jointed or articulated nozzles having a downstream section movably connected to a serially related upstream section where both sections are at least nominally claimed as nozzle parts.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

229, for wriggler or flexible distributors having continuous movement relative a support during spraying.

265.35, for a reaction motor discharge nozzle comprising a member which may be selectively shifted to various positions to vary the line or course of fluid discharge with respect to a fixed axis.

- 266+, especially subclass 269 for spray pipes which may be movably coupled to another spray pipe.
- 279, for support means comprising a flow conduit only arranged to form a ground support for the nozzle.
- 525+, for flow line or nozzle attached or carried handgrips or holders.
- 537+, for a distributor in which the terminal member and a valve part move unitarily.
- 579, for a distributor in which movement of the terminal flow member controls a flow regulator in the fluid system.

## SEE OR SEARCH CLASS:

- 285, Pipe Joints or Couplings, appropriate subclasses, especially subclasses 184+ for a nominally recited nozzle section connected by a coupling member to a conduit means which is not claimed as a nozzle section.

**587.2 Plural distinct articulation type flow connections:**

This subclass is indented under subclass 587.1. Apparatus in which the terminal outlet is connected to the flow conduit by two spaced fluid conducting joint means each permitting relative rotatable or angular movement of the terminal member and supply conduit.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 588, for flexible fluid conducting joint means connecting the fluid supply means and terminal outlet.

**587.3 Includes ball and socket:**

This subclass is indented under subclass 587.2. Apparatus in which at least one of the joint means includes a spherical male formation received within a spherical female formation.

- (1) Note. The spherical male and female formations may be restrained by a pivot pin or other means for movement in a single plane.

**587.4 Ball and socket flow connection:**

This subclass is indented under subclass 587.1. Apparatus in which the flow conducting joint means includes a spherical male formation received within a spherical female formation.

- (1) Note. The spherical male and female formations may be restrained by a pivot pin or other means for movement in a single plane.

## SEE OR SEARCH CLASS:

- 285, Pipe Joints or Couplings, subclasses 261+ for ball and socket fluid conducting joint means without regard to nozzle relationship or detail.

**587.5 Pivot type flow connection:**

This subclass is indented under subclass 587.1. Apparatus wherein the flow conducting joint means allows rotary or angular movement of the terminal member about a fixed axis.

**587.6 With pin in pivot type connection:**

This subclass is indented under subclass 587.5. Apparatus in which the joint means includes a nonfluid conveying stem within the flow passage about which the fluid conducting members move.

**588 Flexible coupling section:**

This subclass is indented under subclass 587. Apparatus in which the egress port carrying member is joined to the flow line by way of a flexible conductor for the fluid.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 152+, and 175+, for hand supported and manipulated distributors having a flexible coupling section joining such distribution to a mobile tank-type supply means.
- 229, for wriggler or flexible distributors having continuous movement relative a support during spraying.
- 547, for a nozzle outlet connected in the circumferential wall of a flexible or pliable supply conduit.

**589 RIGID FLUID CONFINING DISTRIBUTOR:**

This subclass is indented under the class definition. Apparatus comprising a tubular member having inflexible or unyielding wall or walls defining the exterior of the path of fluid flowing towards an egress or discharge opening at one end of the member, which opening imparts some character of flow to the fluid escaping

therefrom, and adapted to be connected at the other end to a fluid system.

**589.1 Fluidic oscillator:**

This subclass is indented under subclass 589. Apparatus wherein the geometry of the flow path causes a periodic or cyclic change in the character of flow imparted to the fluid escaping from the discharge or egress opening.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 99+, for means in addition to the geometry of the flow path for causing a cyclically intermittent discharge.
- 101, for means in addition to the geometry of the flow path for causing a cyclic flow rate to the distributor.
- 102.1+, for motor means which vibrates or jiggles the discharge.
- 308+, for a spray fluid operated continuously moving discharge modifier.

**590 Having interior filter or guide:**

This subclass is indented under subclass 589. Apparatus in which a means is provided upstream of the discharge outlet to (1) hold back or separate material from the system fluid, or (2) spread out or otherwise direct the fluid prior to or during egress from the discharge outlet.

- (1) Note. The interior filter or guide must be in addition to the parts forming the outlet, i.e., it must be part of or in the outlet carrying member. Ribs formed on the walls forming the outlet are considered to be included under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 86, for capillary type filters installed in injection nozzles.
- 214.21+, for means inducing spin or whirl of any fluid stream in a system in which one fluid is mixed with another fluid downstream of a continuously moving distributor which has discharged one of said fluids.
- 228, for sediment collectors or internal diverter baffle in a continuously moving distributor organization.
- 461+, for interior means tending to control rotation of fluid prior to discharge.

- 462, for filters combined with flow deflecting or rotating means (e.g., whirlers).
- 553+, for a terminal member having plural outlet means and an interior filter or guide.
- 575, for a nozzle combined with a valve and a filter means.

**590.3 Foraminous or apertures member:**

This subclass is indented under subclass 590. Apparatus in which the means comprises a member or material having one or more orifices, pores, or passages extending there-through.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 462, for a distributor having fluid deflection or rotation controlling means and a filter or screen.
- 553.3, for a distributor having plural outlets and an orificed, porous or passaged means upstream of the outlets to filter material from the fluid or to spread out or direct the fluid.
- 575, for a distributor having valve means and a filter or screen in the flow line.

SEE OR SEARCH CLASS:

- 55, Gas Separation, appropriate subclasses for a filter or screen, per se, used in apparatus to separate a gas from an initial mixture with a liquid or solid.
- 210, Liquid Purification or Separation, appropriate subclasses for a filter or screen, per se, used to separate particles from a liquid mixture.

**590.5 Plural fluid directing means:**

This subclass is indented under subclass 590. Apparatus comprising a plurality of distinct and separate fluid directing or distributing surfaces (e.g., guide vanes or grooves).

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 553.5, for a distributor having plural outlets and a plurality of distinct and separate fluid directing or distributing surfaces upstream of the outlets.



- 591 Including flow passage liner (e.g., wear liner):**  
This subclass is indented under subclass 589. Apparatus in which the flow passage at or near the nozzle is provided with an insertable flow conducting member usually for replacement or wear resistant reasons.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
265.15, for a reaction motor nozzle liner which is at least partially worn away by melting, breaking or corroding.  
461+, for insertable rotation controlling means of liner form which serve as anti-turbulence devices.
- SEE OR SEARCH CLASS:  
175, Boring or Penetrating the Earth, subclasses 340 and 393 for a liner member in a conduit delivering a fluid to an earth boring or penetrating bit or bit element.
- 592 Flat and tapered:**  
This subclass is indented under subclass 589. Apparatus wherein the nozzle means is characterized by the convergence, in the direction of flow, of at least two walls thereof and which said walls also give an outline of general flattened appearance.
- 593 One wall only tapered to direction of flow:**  
This subclass is indented under subclass 592. Apparatus wherein only one wall is angularly related to the general direction of flow.
- 594 And remaining opposite side walls converging:**  
This subclass is indented under subclass 592. Apparatus having at least two other opposite end or side walls which converge in the direction of flow.
- 595 And superposed curved discharge edges:**  
This subclass is indented under subclass 592. Apparatus having the egress outlet comprised of edges which are arcuate and in overlying arrangement.
- 596 Orifice in separable disc or plate:**  
This subclass is indented under subclass 589. Apparatus in which the orifice is carried by a member of disc or dished form and is removable from the remainder of the nozzle.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
494+, for whirlers formed in slotted or apertured discs or plates.  
535, for fluid pressure responsive flow modifiers having disc-carried outlets or of disc form.  
540, for combined terminal member and valve part comprising a rotatable unit of disc form.
- 597 Elongated orifice in terminal member:**  
This subclass is indented under subclass 589. Apparatus in which the fluid outlet means has one dimension transverse to the general direction of flow which is substantially greater than the other dimension transverse to the direction of flow.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
568, for a distributor having plural outlet means of slit or slot like (elongated) apertures.
- 598 Oblique to direction of flow:**  
This subclass is indented under subclass 597. Apparatus wherein the axis of the outlet in the direction of efflux is not in the same general direction as the supply flow line axis.
- 599 Oval or elliptical:**  
This subclass is indented under subclass 597. Apparatus wherein the the projection of the fluid outlet means in a plane normal to the general direction of flow has an oval or elliptical shape.
- 600 Assembly or disassembly feature:**  
This subclass is indented under subclass 589. Apparatus wherein the terminal member is characterized by an association of elements making assembly or disassembly thereof an optimum operation so as to facilitate cleaning, the replacement of parts and the like.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

587.1+, for terminal members adjustably or shiftably connected to a flow conduit.

**601 Orifice shapes:**

This subclass is indented under subclass 589. Apparatus in which the configuration of the terminal outlet is of the essence.

- (1) Note. The shape herein classified pertains to that of the outlet, e.g., extremity of the conductor, rather than throat configuration or approach channel which is classified in subclass 589 above.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

265.11+, for reaction motor discharge nozzle outlets of various shapes or configurations.

SEE OR SEARCH CLASS:

- 137, Fluid Handling, subclass 802 for miscellaneous flow devices, especially outlet shapes.  
222, Dispensing, subclass 575 for dispensers having particular outlet shapes and see the search notes there included and to Section 14 of that class.

**602 MISCELLANEOUS (E.G., RESILIENT NOZZLE):**

This subclass is indented under the class definition. Apparatus not hereinbefore provided for.

- (1) Note. In this subclass are accumulated as cross-references, spray elements of terminal members, or end elements not provided for in preceding subclasses in which the material from which they are made is of the essence.  
(2) Note. Nozzle means of inherent elasticity as of resilient form or of material readily capable of flexure or distortion under normal manual use are herein included.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 451+, for terminal outlets formed by parts mounted (articulated) for relative movement.  
519, for resilient or deformable deflectors and unitary terminal means.  
534, for fluid pressure responsive resilient or deformable terminal outlets.  
546, for the subject matter of this subclass; however, including means to deform such terminal outlet means.

**650 CONTAINER FOR NON-FLUID MATERIAL, AND SCATTERING MEANS:**

This subclass is indented under the class definition. Apparatus comprising means for holding a supply of material, other than a fluid or a slurry, and means for strewing such material in the form of relatively small solid pieces over an extended area on a surface.

- (1) Note. The phrase "extended area" means an area larger than that which would be covered if the material were merely dropped from the supply holder. An area caused by the motion of a supply holder traveling over the surface to be strewed and merely dropping material from the supply holder is not considered an extended area for purposes of this classification. See Class 414, Material or Article Handling, subclasses 467+ or Class 222, Dispensing, subclasses 608+ for such devices. This distinction becomes very tenuous in some cases since, for example, a conveyor operating at high speed and unloading a wagon will cause a strewing action over an extended area. The line between the definition of this subclass and the art in Classes 414 and 222 as to containers with unloading means is that where a discharge assistant or unloading device of a type found in such classes is claimed and the disclosure is not limited to, or a claim not directed to a strewing action, such as may be brought about by conveyor high speed operation, classification is in Class 414 or Class 222, but where the disclosure is clearly limited or a claim is directed to a substantial strewing action in such device additional to that caused

merely by motion of the supply holder over the surface to be strewed classification under the definition of this subclass results from the claiming of some means for strewing comprising a moving device which is recognizable as additional to a dispenser with a discharge assistant or a vehicle with an unloading means. In some instances the strewing over an extended area is caused by a deflecting means or diverging nozzle arrangement or the like which causes material issuing from an opening in the supply holder to spread out over an area wider than that of the opening. The extended area in some cases may be little more than a line in the absence of motion of the supply holder over the surface to be strewed.

- (2) Note. In accordance with the line between the subject matter of subclass 650 and Class 222, as indicated in (1) Note, subclass 650 takes apparatus in which the particulate material is strewn in the ambient so that it falls in an area which is substantially more extensive than that covered by merely dropping the material from an opening of a stationary or ambulant dispenser. Where, however an opening is, or openings are, formed in a wall of the supply holder and strewing is effected by movement of the supply holder classification is in Class 222. See Class 222, subclasses 160+ and 565, for examples of such strewing. Further, for classification under the definition of subclass 650 rather than in Class 222 the means for strewing must be positively claimed. When such means comprises a relatively moving element, such as a rotating distributor the reference to it in a claim may be in the broadest terms. When, however, the strewing means comprises a terminal outlet, such as a nozzle, a mere broad description of such nozzle will not serve to cause classification under the definition of subclass 650; the recitation of the nozzle in a claim must be specific and its strewing function must be clearly indicated by the disclosure as being due to the specifically recited structure of the nozzle, rather than due to ambient wind conditions or the nature of the material dispensed,

such as fine powder. The subject matter of subclass 652 forms an exception to this line, however; that subclass constitutes an art collection of devices for strewing by direct hand manipulation. In close cases it is very difficult to determine just what constitutes the opening of the dispenser and also what constitutes an added feature of the dispenser for spreading material, so that placement of a patent as an original will depend on the judgement of the classifier and the placement of like art. Usually a discharge assistant which is in a container or extends from the container partially thru an opening is not considered to cause classification under the definition of subclass 650 unless the special circumstances mentioned in (1) Note are present.

- (3) Note. Included in this definition of "strewing means" is a pipe having longitudinally spaced apertures or perforations.
- (4) Note. Excluded under this definition is a flowable slurry of solids in liquid; this is considered a fluid and is classified in another section of the class. Included under this definition is material comprising solids with a small amount of liquid mixed therewith, but not sufficient to permit flow.
- (5) Note. A disclosure of a device for strewing or scattering or particulate matter should not be found as an original in any subclass following this group unless combined with means for sprinkling, spraying or diffusing a fluid (e.g., subclass 336) or as a nozzle, per se, disclosed for discharging fluent solid, but also capable of use with a fluid.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 146+, for apparatus comprising mobile tank-type supply means for a fluid and means to distribute the fluid.
- 214+, for a fluid distributor comprising a slinger, splasher or a deflector rotated relative to an effluent fluid.

## SEE OR SEARCH CLASS:

- 83, Cutting, appropriate subclasses for a cutting means of the type therein defined, or the combination comprising such cutting means specifically recited, and a nominally recited strewing or scattering means. A combination which comprises a comminuting means and a scattering means, but in which the cutting means is so broadly recited as to preclude classification in Class 83, is classified in this or an indented subclass, regardless of how broadly recited is the scattering means. Also see the class definition of Class 239, Fluid Sprinkling, Spraying, and Diffusing, reference to Class 83, for a statement of the line.
- 111, Planting, subclasses 130+ for apparatus adapted to strew or scatter nonfluid material on the ground combined with a device which mixes or covers the strewn material with the soil.
- 198, Conveyors: Power-Driven, appropriate subclasses, especially subclasses 638+, for a power driven conveyor which trajects material, which may be a fluent, a distance, there being no container for nonfluid material claimed.
- 222, Dispensing, appropriate subclasses for a container for nonfluid material, and a means for merely dispensing the material, especially subclasses 160+ and 608+ for a movably mounted or an ambulant supply holder, respectively, having dispensing features for merely discharging fluent material. See also (1) Note above.
- 241, Solid Material Comminution or Disintegration, appropriate subclasses for a comminuting means, per se, or the combination comprising a comminuting means specifically recited and a nominally included strewing or scattering means. A combination which comprises a comminuting means and a scattering means, but in which the comminuting means is so broadly recited as to preclude classification in Class 241, is classified in this or an indented subclass, regardless of how broadly recited is the scattering means. Also see the class definition of Class 239, Lines With Other Classes, Fluid Sprinkling, Spraying, and Diffusing, reference to Class 241, for a statement of the line.
- 291, Track Sanders, appropriate subclasses for apparatus disclosed as on a vehicle for distributing sand or like material to the vehicle wheel tread or to a surface on which the vehicle rides such as a road or rail, for the purpose of increasing the tractive effect between such wheel and road or rail. An apparatus on a vehicle, the sole purpose of which is the sanding of a surface for the use of other vehicles, is found in Class 239, Fluid Sprinkling, Spraying, and Diffusing, subclasses 650+.
- 404, Road Structure, Process, or Apparatus, subclasses 101+ for an apparatus to distribute material on a road or roadway.
- 414, Material or Article Handling, appropriate subclasses for static structures, vehicles, etc., of a kind proper for the class, provided with means for discharging them.
- 416, Fluid Reaction Surfaces (i.e., Impellers), appropriate subclasses for an impeller means, per se, disclosed for scattering a fluid.
- 651 With loading or loading facilitating means:**  
This subclass is indented under subclass 650. Apparatus comprising a means disclosed as used for or aiding in the operation of, placing the material into the supply holder.
- (1) Note. Merely positioning the supply holder for receiving the material from a source by gravity does not qualify as loading or loading facilitating means under this definition.
- 652 Scattering by direct manual movement:**  
This subclass is indented under subclass 650. Apparatus in which the strewing means comprises a member from the end of which the material is strewn, the member being disclosed as intended to strew material by being manually moved relative to the body of a person manipulating the member, movement being

caused without the use of a mechanism comprising relatively moving parts.

- (1) Note. The member, of and by itself, is not necessarily a strewing means under the definition of subclass 650. The manually caused motion to cause strewing is sufficient to qualify under the definition. The manual motion must be intended to be of considerable extent to effect a substantial strewing. See Search Class below for devices which dispense by manual jiggling or the like.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 374, for a hand manipulable shaker or jigler for sprinkling or spraying fluids.

SEE OR SEARCH CLASS:

- 222, Dispensing, subclass 565 and the subclasses there listed (also see section 12 and 12.5 of the main class definition) for hand manipulable shakers (e.g., salt shakers, etc.).

**653 Body supported:**

This subclass is indented under subclass 650. Apparatus comprising a means, other than a handle, for supporting the apparatus on the body of a person or animal, or a means, such as a special contour for the supply holder, related to the function of supporting the apparatus on the body of a person or animal.

**654 With means generating or supplying gaseous mixing current:**

This subclass is indented under subclass 650. Apparatus comprising a device which develops a gas flow or acts as a source of supply of gas, to mix with the material.

- (1) Note. The current of gas may be applied to the material after it has been introduced into the ambient, may mingle with the material in the strewing means before it reaches the ambient, or may act as a fluid to entrain and transport the material to the ambient.
- (2) Note. If the current of gas is applied to the material in the ambient, this is considered to be the strewing means required for this definition (see subclass

650); otherwise the strewing means must meet the requirement set out in (2) Note of subclass 650 in regard to either the rotary or nozzle type scatterer.

- (3) Note. Included under this definition is a device comprising a single gas stream developing or source means discharging to a plurality of strewing means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 77+, for an orchard type mobile duster comprising means to discharge a material into a stream of generated gaseous conveying current which carried the material onto a tree or trees.

SEE OR SEARCH CLASS:

- 222, Dispensing, subclasses 617 and 630+ for a dispenser with fluid flow discharge and subclass 394 for a dispenser in which a fluid (i.e., discharge assistant) contacts the material to be dispensed and moves it toward the outlet.
- 366, Agitating, subclasses 101+ for gas effected mixing, per se.
- 406, Conveyors: Fluid Current, appropriate subclasses for fluid current conveyors, particularly subclasses 154+ for fluid current conveyor outlets. Generally, any structure recited in a claim that accomplishes scattering or spraying (e.g., specific nozzle structure or relative orientation of spaced outlets) should be considered for Class 239 rather than Class 406.
- 414, Material or Article Handling, subclass 524 for a self-loading or unloading vehicle having a load handling means of the fluid current conveyor type.

**655 Laterally extending scatter unit:**

This subclass is indented under subclass 654. Apparatus comprising an elongated strewing means extending in the direction of its length outwardly from the supply holder when looked at in plain view the longitudinal axis of the elongated strewing means being substantially transverse to the direction of any intended movement of the supply holder.

- (1) Note. For meaning of “elongated strewing means” under this definition see (1) Note in subclass 664.

**656 Scatterer fed by plural containers:**

This subclass is indented under subclass 650. Apparatus in which a single strewing means is supplied with material from a plurality of supply holders.

- (1) Note. The supply holders must be primary containers of the material such that different materials may be supplied. A mere dividing wall in the lower portion of a container is not included, such apparatus being classified on other features.
- (2) Note. Included under this definition is any arrangement of two primary holders, connected in such manner that a mixture of the two materials can be supplied to the single strewing means.

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

This subclass is indented under subclass 650. Apparatus in which the supply holder is mounted on a support means so as to be movable from a first position in which the material in the holder is not readily movable out of the holder by gravity to a second position in which gravity causes or greatly assists in the movement of the material out of the holder.

- (1) Note. The support means must comprise more than a wheel axle about which the supply holder may be tilted by the user of the device. Such devices are classified on other features.
- (2) Note. This subclass is the locus for patents comprising tilting containers of the dump truck type, even if details of the dump mechanism are not recited.

**SEE OR SEARCH CLASS:**

222, Dispensing, subclass 166 for a dispensing device comprising a container for material to be dispensed, the container mounted for tilting motion to discharge by gravity, e.g., mounted about a wheel axle so as to be tilted by the user of the device. The line

between the two Classes, 222 and 239, Fluid Sprinkling, Spraying, and Diffusing is as follows: a dispensing hopper, per se, but not of the tilting type goes into Class 222, into a subclass other than 166; a dumping vehicle combined with a hopper attachment which acts as a spreader but not to spread a swath wider than the vehicle goes into Class 222, subclass 166 if claimed as a dumping vehicle and to another subclass as an original if not so claimed; a dumping vehicle disclosure and a claim to the combination of the vehicle and a hopper or spreader attachment which covers a swath wider than the vehicle will be classified in this subclass (Class 239, subclass 657).

414, Material or Article Handling, subclasses 469+ for a self-loading or unloading vehicle having a load receiving (i.e., supporting) portion which is pivotable relative to the horizontal.

**658 Scattering means is flail:**

This subclass is indented under subclass 650. Apparatus in which the means for strewing comprises a flexible element which is rotatable about an axis and is so constructed or arranged that it assumes a substantially vertical or drooping position when at rest and a position substantially at right angles to the axis when rotated to strew the material.

- (1) Note. For the means of “rotates about an axis” see (1) Note in subclass 681.
- (2) Note. Included as a flexible element under this definition is an element pivotally connected to a rotary carrier.
- (3) Note. The means may be positioned within the container to scatter the material therein, or may be without the the container, the material being supplied thereto.

**SEE OR SEARCH CLASS:**

172, Earth Working, subclass 45 for an implement of the flail type for working or disturbing the earth.

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

This subclass is indented under subclass 650. Apparatus in which the strewing means has an oscillating, reciprocating, shaking or other back and forth movement while in operation in order to effect or assist the strewing function.

- (1) Note. The movement of the strewing means may be caused either by a positive drive or by the impingement of the material onto such means so as to cause the back and forth movement due to the construction or arrangement of the means, e.g., the means is of springy material which vibrates when hit by the material.
- (2) Note. The main structural difference between this subclass (659) and the vibratory subclasses of Class 222, Dispensing, subclasses 161, 196-203 is that in subclass 659 the vibrating member is sufficiently near the terminal material contact point that the vibratory movement causes the discharging material to scatter, while in Class 222 the vibration merely causes the material to move toward or out of the discharge outlet.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 4, for a process of scattering or spraying a fluent material by an element which is caused to continuously vibrate.
- 102.1+, for a device which sprays a fluid by means of a motor driven element which cyclically and rapidly changes the normal character of discharge of fluid from an outlet (e.g., by continuously moving the discharge member, or continuously moving a member in contact with the fluid).
- 225.1+, for a fluid spraying or sprinkling device comprising a distributor which is continuously moving (e.g., oscillating) relative to a support during discharge.
- 652, for a device in which a nonfluid material is caused to be scattered or strewn by reciprocation of a tube manually by a person.

**660 With overload release or relief:**

This subclass is indented under subclass 650. Apparatus in which a part of the apparatus shifts its position relative to an adjacent part without the intervention of a human operator, and in response to a transient condition in which a part of the apparatus would be subjected to undesirable stress (e.g., when a lump, clod or rock is encountered in otherwise easily disintegratable material) if shifting did not occur.

- (1) Note. Shifting of position which occurs in order to take up the shock of starting is not included under this definition. Such devices are classified on other features.

**661 With means for mounting on tractor:**

This subclass is indented under subclass 650. Apparatus comprising a means disclosed for attaching the apparatus to a motor vehicle of the type which does not have any substantial provision for supporting material for transportation but is especially intended to pull a trailing vehicle or to pull or support an implement, such as a plow, which operates to perform its intended function while being so pulled or supported.

- (1) Note. The motor vehicle of this definition is usually called a tractor.
- (2) Note. Apparatus under the definition is typically constructed to be used as a detachable unitary attachment for a tractor.

**662 With feature relating to liquid material:**

This subclass is indented under subclass 650. Apparatus in which there is a means (e.g., a leak proof supply holder) which is especially provided because the material contains liquid which tends to or does separate from the solid portions of the material.

- (1) Note. The material as a whole under this definition is not a slurry, i.e., a mixture of solid particles and a liquid which is handled as a viscous liquid. Apparatus for handling a slurry is classifiable as if the slurry were a liquid. Typically, the material being handled by the apparatus

of this subclass is manure, some portion of which is liquid.

**663 Convertible or combined:**

This subclass is indented under subclass 650. Apparatus not provided for in preceding subclasses and which (1) is in combination with features other than for material handling or treating or (2) by relative rearrangement of its parts or by the addition or omission of a part is so changed as to become (A) basic subject matter of the same class of a different character or having a different mode of operation or (B) basic subject matter of another class.

- (1) Note. A mere preamble in a claim to the effect that a device is convertible or is a conversion attachment is generally not sufficient for classification under this definition. The conversion feature should be spelled out as by (a) specifically claiming one embodiment of an apparatus having a first function and claiming with that embodiment a feature useable only for a different function, or (b) repeated functional statements in the claim, or (c) a preamble which is so long and detailed that it may be considered part of the body of the claim. Where no other suitable classification exists a broad mention of conversion may be enough for classification under this definition.
- (2) Note. The change in the apparatus must be more than merely placing a part in one of a series of adjacent holes, or making a change which amounts to only an adjustment, changing between operative and inoperative positions or other minor alteration in the overall functioning of the device.
- (3) Note. Examples of devices included under this definition of "combined" are combinations with (1) a separator to classify or assort different portions of the material, (2) a plurality of different types of discharge members (e.g., a material discharge guide for Class 222, Dispensing and a strewing means for this class, etc.) with means, as a valve to selectively and alternatively choose the type of discharge depending on the material

handled, (3) brake means acting on vehicle wheels, (4) vehicle features in addition to those required for the handling of the material, etc. Included under this definition of convertible is an unloading or dispensing vehicle of the type classified in Class 414, Material or Article Handling, Class 298, Land Vehicles: Dumping, or Class 222, Dispensing and a strewing or scattering means of the type classified in this group of subclasses and attachable or removable at will. Excluded from "combined" under this definition is the combination with any type of physical treatment of the material (e.g., comminuting, heating, agitating, etc.) or handling, (e.g., loading, conveying, etc.).

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

676, for an end gate or barrier for a supply holder having a means feeding material horizontally, the end gate or barrier being upstream of the strewing means and adjustable to act as a regulating, lump breaking, disintegrating means or the like.

**664 Ambulant container and laterally extending scatterer:**

This subclass is indented under subclass 650. Apparatus which is intended to be used by traversing a surface, comprising an elongated strewing means extending in the direction of its length outwardly from the supply holder when looked at in plain view, the longitudinal axis of the elongated strewing means being substantially transverse to the direction of intended movement of the supply holder.

- (1) Note. The "elongated strewing means" under this definition comprises any arrangement of strewing means which (1) results in a pattern of strewn material which is generally elongated when the whole apparatus is not traversing the surface, the pattern extending in the direction of its length outwardly from the supply container and laterally of the direction of traverse of the apparatus over the surface and (2) is physically located outwardly from the container in a direction laterally of the direction of



traverse of the apparatus over the surface.

- (2) Note. Excluded under this definition of “elongated strewing means” is a single rotating scatterer located outwardly of one side of the container, or two rotating scatterers, one on each side of the container and extending outwardly therefrom in a direction laterally to the direction of traverse; such devices will be found in 681+. However, a plurality of rotating scattering units arranged side by side transverse to the direction of movement of the container and located outwardly of the container is included under this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

655, for apparatus comprising a similar elongated, outwardly extending strewing unit and a means which develops a gas flow or acts as a source of gas, the gas mixing with the material and discharging through the strewing unit.

**665 Including means varying scatter pattern of rotating scatterer:**

This subclass is indented under subclass 650. Apparatus comprising a strewing means rotating about an axis and means for changing some characteristic of the pattern of the material being strewed, such as its direction or width.

- (1) Note. For the meaning of “rotating about an axis” see (1) Note in the definitions of subclass 681.
- (2) Note. A means for changing a characteristic comprising no more than a means for changing the speed of the strewing means, a means for changing the amount of material fed to the strewing means or a means for changing the speed or direction of a vehicle on which the strewing means is mounted is not included. Such devices are classified on other features.

SEE OR SEARCH THIS CLASS, SUBCLASS:

97+, for apparatus in which pattern control comprises means for synchronizing a

flow regulator with a cyclically moving distributor.

**666 Adjustable deflector:**

This subclass is indented under subclass 665. Apparatus comprising a selectively adjustable member which intercepts the path of at least some of the material after it leaves the strewing means, the adjustment of the member effecting some change in the pattern of the material being strewed.

- (1) Note. For purposes of this subclass definition, a rotating “feeder” which inherently acts as a scatterer, but which, as disclosed, delivers material to an adjustable deflecting or strewing element, is considered to be the “strewing means”.

SEE OR SEARCH THIS CLASS, SUBCLASS:

650, for an adjustable deflecting or strewing element which acts on material supplied thereto by a nonrotating feeder means.

**667 Plural, rotary scatterers, on intersecting axes or coaxial and counter rotating:**

This subclass is indented under subclass 650. Apparatus comprising at least two strewing means rotating (1) about an axis which is common to both, each strewing means rotating in a direction opposite to that of the other, or (2) about separate, angularly related axes.

- (1) Note. For the meaning of “rotating about an axis” see (1) Note in subclass 681.

**668 Hopper and gravity discharge to scatterer receiving material peripherally:**

This subclass is indented under subclass 650. Apparatus in which the supply holder has an opening in a lower portion thereof and is so constructed, with at least one sloping wall leading to the opening, that the material is discharged by the action of gravity, and in which the strewing means rotates about an axis and receives the material in a direction substantially transverse to the axis.

- (1) Note. For the meaning of “rotates about an axis” see (1) Note in subclass 681.

- (2) Note. An agitating or disintegrating means may be used to assist the flow of material by breaking up lumps, but the supply holder must be so constructed that the use of a conveyor or ejector to move material horizontally is not necessary.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

679+, for an apparatus comprising a conveyor or other follower mechanism feeding material substantially horizontally towards a rotary scatterer which receives the material peripherally.

SEE OR SEARCH CLASS:

198, Conveyors: Power-Driven, subclasses 311, 359+ and 523+ for a hopper which feeds or discharges material to a conveyor where no scattering or strewing of the material is intended.

**669 Scatterer at least partially within hopper:**  
This subclass is indented under subclass 668. Apparatus in which the strewing means or a portion thereof is located in the confines of the supply holder.

**670 Drive from vehicle motor power take off:**  
This subclass is indented under subclass 650. Apparatus comprising a driven strewing means, the power for driving the strewing means being furnished by a motor which is used to propel a vehicle.

- (1) Note. The drive train from the motor to the strewing means may include a ground wheel driven by the motor.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

661, for similar apparatus in which the power take off means is from a tractor type vehicle to which the apparatus is attached.

**671 Including raking type conveyor moving material toward scatterer:**  
This subclass is indented under subclass 650. Apparatus comprising a means acting in substantially a linear direction on the top portion

of the material in the supply holder to force or deliver the material towards the strewing means, in the manner of a rake.

- (1) Note. A rotating means, e.g., a "beater", acting on the top of the material is not included in this definition. See subclass 680 for a beater acting on the top portion of the material.

**672 Including driven conveyor or follower feeding material horizontally towards scatterer:**  
This subclass is indented under subclass 650. Apparatus comprising means acting on the material in the supply holder for delivering it in a horizontal direction toward the strewing means, said delivering means comprising (1) a driven conveyor or (2) a means acting as an end of the material in the supply holder.

- (1) Note. If a series of strewing means is claimed, (e.g., a rotating "beater" throwing material to a rotating "widespread") a strewing means upstream of the final means is considered to be a kind of conveyor. If, however, such a series of strewing means is shown, but the final one is not claimed then an upstream strewing means, e.g., a beater, which, as claimed, functions like a final strewing means, is considered to be a final strewing means for purposes of placement under the definition of subclass 650.

- (2) Note. In order to qualify under this definition, there must be a substantial horizontal component of motion.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

671, for a supply holder and a means which acts substantially in a linear direction on the top portion of the material to move the material, in the manner of a rake, towards the strewing means.

**673 Plural scatterers receiving material axially:**  
This subclass is indented under subclass 672. Apparatus comprising at least two strewing means, each of which rotates about an axis to perform its strewing function and each of which is disclosed as strewing material into final position in the ambient, rather than to another downstream strewing means, the mate-

rial being presented to each of the strewing means in a direction which is substantially parallel to the axis of rotation and being scattered in substantially a radial direction.

- (1) Note. For the meaning of “rotates about an axis” see (1) Note in subclass 681.
- (2) Note. Just what constitutes a plurality of strewing units rather than a single unit with a plurality of parts is sometimes difficult to decide. If one unit rotates on a different axis than another, or in a direction opposite to that of another, a plurality of units is considered to exist. However, sometimes where there are distinct sub-assemblies, each comprising a complete unit, a plurality of units are considered to exist even if they rotate about the same axis.

**674 Feed means outside of primary supply container :**

This subclass is indented under subclass 672. Apparatus in which the means for delivering material toward the strewing means is located outside of the confines of the principal supply holder for the material.

- (1) Note. In addition to the delivering means outside of the supply holder, there may be means within the holder also delivering material toward the strewing means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

655, 664, for a device comprising a container and laterally extending scatterer in which the means feeding to the scatterer may be outside of the container.

**675 Screw conveyor:**

This subclass is indented under subclass 672. Apparatus in which the means for delivering material toward the strewing means comprises a conveyor having a generally screwlike configuration so that it turns on its axis material is forced along the direction of its axis.

**676 Including movable gate, barrier or valve upstream of scatterer:**

This subclass is indented under subclass 672. Apparatus comprising a movable means acting on the material before reaching the strewing means, which functions as a valve to regulate flow of material to the strewing means or in one position prevents the material from pressing against the strewing means and in another position permits the material to reach the strewing means.

**677 Speed varying means for driven scatterer or feed:**

This subclass is indented under subclass 672. Apparatus comprising a driven strewing means and means for varying the rate of movement of the strewing means, or of the means delivering material towards the strewing means, independently of the speed of the primary driving means for the strewing or delivering means.

- (1) Note. The speed varying means must be capable of changing speed at the will of the operator while the apparatus is in motion; merely replacing one gear with another while the apparatus is at rest is not included. A means which stops the motion of the conveyor or other feeding means at a predetermined position is excluded and will be found in subclass 678, even if the conveyor or other feeding means is reversed in direction and its speed in this reverse direction increased.

**678 Limit means stopping feed:**

This subclass is indented under subclass 672. Apparatus comprising means which causes the motion of the material delivering means to be interrupted when the delivering means arrives at a pre-selected position, without the intervention of a human operator.

**679 Rotating scatterer receiving material peripherally:**

This subclass is indented under subclass 672. Apparatus comprising a strewing means which rotates about an axis and which receives the material in a direction generally transverse to the axis of rotation.

- (1) Note. For the meaning of “rotates about an axis” see (1) Note in subclass 681.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

668, for a strewing means which receives the material in a direction generally transverse to the axis of rotation, and in which the supply holder is constructed with an opening in the lower wall and a sloping wall leading to the opening, the material being discharged to the strewing means by the action of gravity.

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

This subclass is indented under subclass 679. Apparatus comprising a means rotating about an axis and acting on the material before it reaches the final rotating strewing means to deliver the material towards the strewing means or to strew the material over an extended area.

(1) Note. For the meaning of “rotating about an axis” see (1) Note in subclass 681.

**681 Rotating scatterer:**

This subclass is indented under subclass 650. Apparatus comprising a means which rotates about an axis in order to strew material.

(1) Note. Rotation about an axis is a movement of more than 360 degrees about the axis. The axis may be fixed or moving but the rotating means must be essentially wheellike in nature or moving in a substantially circular orbit about the axis. An endless conveyor type device which moves in an elongated orbit is not included. Such strewing means is classified on other features.

(2) Note. An apparatus including a rotating means which acts to strew material but which is disclosed as feeding the material to a downstream distributing means is classifiable under this definition if the downstream means is not claimed. If the downstream means is claimed then the upstream rotating means is considered a kind of conveyor and the apparatus is classifiable in subclasses 672+ or in other places depending on the nature of

the downstream distributor or other features.

**682 Plural:**

This subclass is indented under subclass 681. Apparatus comprising at least two scattering or strewing means.

(1) Note. For comments relative to determination of “plural” strewing units, see (2) Note in subclass 673.

**683 Including agitating means:**

This subclass is indented under subclass 681. Apparatus in which there is a means to agitate or break up lumps in the material before it reaches the strewing means.

SEE OR SEARCH CLASS:

366, Agitating, for agitating devices, per se.

**684 Including agitating means:**

This subclass is indented under subclass 681. Apparatus in which a claim includes some specific recitation of the means which functions to impart motion to the strewing means.

(1) Note. In order to qualify under this definition of “specific driving means”, the claim must include at the minimum a power means (e.g., prime mover, ground wheel, hand crank, etc.) and one portion of a gear train or linkage system (e.g., pulley, belt, bell crank, etc.) between the power means and the strewing means, claimed in such a manner as to clearly establish the presence of both means. Merely reciting a broad “means” which, as disclosed, includes the entire driving means is not included under this definition.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

670, for a drive means for the strewing means comprising a power take off arrangement from a vehicle.

**685 From ground wheel:**

This subclass is indented under subclass 684. Apparatus in which the means which imparts motion comprises a wheel freely rolling over the ground.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

654+, for a device in which a ground wheel imparts motion to a gaseous current generating means.

**686 Manual or pedal:**

This subclass is indented under subclass 684. Apparatus in which a means operated by the hand or foot of a person or animal supplies power for the drive.

**687 Scatterer receives material axially:**

This subclass is indented under subclass 681. Apparatus in which the rotary strewing means acts on material which is presented to it in a substantially axial direction to throw it out in a substantially radial direction by centrifugal force.

**688 Scatterer has radially directed tube:**

This subclass is indented under subclass 687. Apparatus in which the strewing means comprises at least one radially extending tube which receives material at an end near the axis of rotation and throws it out at the other end.

**689 Scatterer is tubular or in surrounding housing:**

This subclass is indented under subclass 650. Apparatus in which the means for strewing is of tubular form, e.g., a nozzle, or is enclosed in a housing which surrounds it.

(1) Note. The housing completely extends around the strewing means in cross-section but a portion of the strewing means may protrude beyond the end of the housing.

(2) Note. The strewing means may comprise a plurality of tubular members which individually are not strewing means but collectively are a strewing means (e.g., a plurality of tubes branching out and diverging from a single source).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

652, for a manually moved tube to strew material.

**690 ELECTROSTATIC TYPE:**

This subclass is indented under the class definition. Apparatus to project, scatter, sprinkle, or drip material from a supply system into the ambient air or atmosphere combined with a means to electrostatically charge the resulting distributed material in order to obtain a desired characteristic, e.g., dispersion, drop size, velocity, or direction.

(1) Note. Some characteristic structure of an electrostatic distribution must be claimed to warrant classification herein, for example, insulated electric conductors, electric connecting means, and nominal electric power supply means have been considered significant electrostatic distributor features for classification herein.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

3, for methods of electrostatically distributing material.

SEE OR SEARCH CLASS:

118, Coating Apparatus, pertinent subclasses, especially subclasses 620+, and see the Notes thereto for patents claiming an electrostatic spraying device and (a) a work conveyor or other specific or nominal work supporting device, (b) some relation of the spraying device to the positively recited work, e.g., the relative spacing or attitude between the work and the spraying device, or (c) a particular motion of the sprayer relative to the work determined exclusively by characteristics of the work or by the law of the machine of which the sprayer forms a part. A nominal claiming of the work itself and/or electrostatic, spray charging electrode in space has been included in this class (239) provided there is no claimed relation between the work and either the electrode or the fluid spraying or projecting means. The following examples are considered work relations and indicate classification in Class 118 when the claim also includes positive recitation of the work (even though

broadly or by name only): (a) electrical connections between the work and either the fluid sprayer or an electrostatic charge generator, or (b) a statement that the sprayer is spaced close to the work. See Class 118, Coating Apparatus, class definition for additional explanation of the line.

- 361, Electricity: Electrical Systems and Devices, appropriate subclasses, especially subclasses 226+, and see the Notes thereto for particle charging methods and apparatus involving: (a) electrostatic spraying with significant supply means limited to use only with powder or pulverulent material, (b) residual electrostatic dispersing of liquid into spray or fog (e.g., liquid removed from the supply system solely by electrostatic force). A claimed combination of a distributor means under the definition of Class 239 and means to electrostatically charge the fluid upstream, at, or downstream of the distributor is proper subject matter for Class 239.
- 427, Coating Processes, subclasses 458+ for coating processes in general wherein an electrostatic charge is utilized to perfect the coating operation.

#### **690.1 Induction charging:**

This subclass is indented under subclass 690. Apparatus wherein the distributed material is in the form of charged particles which respond to an influence or variation in an electric force field created by the charging means at the time the particles are formed, thereby obtaining a charge of opposite polarity to that of the charging means.

- (1) Note. Induction charging is a different type of particle charging means than a "corona discharge" charging means in which particles, after they are formed, are charged with the same polarity as the corona discharge electrode by direct transfer of that charge through contact with either the electrode itself or with atmospheric ions generated by the electrode.

#### **691 With automatic safety feature:**

This subclass is indented under subclass 690. Apparatus in which a spray device is provided with means for sensing an abnormal hazardous condition of operation which may or may not occur and is provided with a further means for interrupting the electrical power supply to the spray device when the hazardous condition is sensed.

#### **692 With electrodynamic generator in spray device:**

This subclass is indented under subclass 690. Apparatus whereby a spray device is provided with means whereby gaseous fluid is utilized in the production of an electric charge, the electric charge being transmitted to the spray material passing through the spray device.

#### **693 Spray device recovers unused particles:**

This subclass is indented under subclass 690. Apparatus wherein a spray device is provided with means for collecting particles not consumed during a work operation.

SEE OR SEARCH CLASS:

118, Coating Apparatus, subclass 326 for projected or spray type coating apparatus including a hood or offtake for waste material, and see the search notes thereunder.

#### **694 With cyclical movable support:**

This subclass is indented under subclass 690. Apparatus wherein a spray device is fixedly mounted on structure having recurring to-and-fro movement along a dimension of an article to be sprayed.

#### **695 Plural spray devices:**

This subclass is indented under subclass 690. Apparatus in which there is provided at least two separate units each comprising a spray means for performing work.

#### **696 Having plural exit openings:**

This subclass is indented under subclass 690. Apparatus wherein a spray device comprises at least two exiting ports through which fluent spray material is emitted.

- 697 Fixed member deflects exiting material:**  
This subclass is indented under subclass 690. Apparatus wherein there is provided a member in the path of travel of spray material at or forward of a spray device exit for spreading or otherwise shunting exiting material in a desired manner.
- (1) Note. A valve member at the exit opening of the spray device which when opened deflects exiting material from a normal path of travel is deemed proper for classification here.
- 698 Forward of nozzle:**  
This subclass is indented under subclass 697. Apparatus wherein the member in the path of travel of the material is positioned forward of the spray material exit.
- 699 With impeller (e.g., vibrator):**  
This subclass is indented under subclass 690. Apparatus wherein a spray device comprises a positively moved member for imparting a desired motion to the spray material.
- 700 Rotary:**  
This subclass is indented under subclass 699. Apparatus wherein the positively moved member turns or revolves about an axis.
- 701 With spray portion intercept member:**  
This subclass is indented under subclass 700. Apparatus provided with shield means positioned to allow a portion of the spray material to be directed toward the object being sprayed.
- 702 With axially spaced impeller surfaces:**  
This subclass is indented under subclass 700. Apparatus wherein the positively moved member comprises at least two impeller portions or members spaced along the revolving axis.
- 703 Dish- or cone-shaped impeller:**  
This subclass is indented under subclass 700. Apparatus comprises a revolving member having a peripheral material emitting edge in a plane other than the plane containing a central portion thereof.
- 704 With fluid entrainment:**  
This subclass is indented under subclass 690. Apparatus wherein the spray device comprises means for combining the spray material with a fluid.
- (1) Note. The fluid may be used to convey, impel, mix, atomize, etc., the spray material.
- 705 With air outlet forward of material outlet:**  
This subclass is indented under subclass 704. Apparatus wherein the spray device is provided with structure extending forward of the spray material outlet, the structure having at least one fluid orifice forward of the spray material outlet.
- 706 With charging electrode mounted on spray device:**  
This subclass is indented under subclass 704. Apparatus wherein the spray device comprises spray material ionizing means.
- 707 Extending forward of material outlet:**  
This subclass is indented under subclass 706. Apparatus wherein the ionizing means is either forward of or has a portion extending forward of the spray material exit.
- 708 Pressurized spray material:**  
This subclass is indented under subclass 690. Apparatus wherein spray material is positively moved for passage through the spray device.
- 722 MOBILE DISTRIBUTOR:**  
This subclass is indented under the class definition. Apparatus including distribution means which sprinkles, sprays or throws fluid over an area or areas to be treated, the distribution means being supplies with fluid from a source or sources which are fixed in position and being mounted on a carrier means whereby the device may be readily moved from one place to another.
- (1) Note. Movement of the carrier may take place (1) during the spraying operation usually for the purpose of increasing the size of the treatment area or (2) between spraying operations so that the device may be moved from one location to another.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 146+, for mobile distributors whose source of supply is carried by the distributor.  
225+, for a distributor which continuously moves relative to a fixed support during spraying.

SEE OR SEARCH CLASS:

- 137, Fluid Handling, subclass 355.12 for apparatus designed to store or retrieve a hose conduit or nozzle and mounted on a vehicle which supports the apparatus on the ground and moves it from one place to another and subclasses 899+ for fluid handling apparatus arranged on vehicular means to move the apparatus to a place of use; note the line between Class 137 and Class 239 as specified in the class definition of Class 239, Lines With Other Classes, Slow Diffusers, under the Search Class note and also note the exception to that line in subclasses 726+ below.

**723 Irrigation device:**

This subclass is indented under subclass 722. Apparatus wherein the treating fluid includes water and the area or areas to be treated is the ground.

**724 Open pond or ditch type supply:**

This subclass is indented under subclass 723. Apparatus wherein the source of fluid supplied to the distributor is (1) a body of water exposed at ground level and confined by features of terrain, or (2) comprises coverless tanks, through, flumes, or the like, along which, or over which the apparatus is propelled or guided.

**725 Floating distribution means:**

This subclass is indented under subclass 724. Apparatus in which the distributor is buoyantly supported by the supply fluid.

**726 Nozzles spaced along mobile pipeline:**

This subclass is indented under subclass 723. Apparatus comprising an elongated, generally horizontally disposed, fluid conducting conduit supported by vehicular means above the ground, the conduit being disclosed as either

having or being intended to have fluid distribution means at spaced intervals there along.

- (1) Note. In regard to the line between Class 137 and Class 239 (as specified in the class definition of Class 239, Lines With Other Classes, Slow Diffusers under the Search Class note), the placement of documents within Class 239, these subclasses (726+), and Class 137, subclasses 899+, represents an exception to the specified class line. This exception to the line between Classes 137 and 239 relates only to the placement of documents between subclasses 726+ of Class 239. Specifically, any document which disclosed a portable, over-head type of irrigating or other sprinkling apparatus, which is supported on vehicular means, which has some form of sprinkler or other spray outlet means secured thereto for sprinkling or spraying fluid onto the ground, and which claims subject matter encompassed by the definition of Class 239, subclasses 726+ regardless of whether or not a sprinkler or other spray outlet means was specified in the claims.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 266+, for plural longitudinally spaced outlet means in a flow line.

**727 Including additive supply means:**

This subclass is indented under subclass 726. Apparatus, additionally including means to distribute a material such as a fertilizer, pesticide, or the like along with, or in addition to, the irrigating fluid.

**728 Center pivot:**

This subclass is indented under subclass 726. Apparatus wherein the conduit has one end thereof secured to a pivot point fixed with respect to the ground; and wherein the vehicular support means is radially outwardly spaced from the pivot towards the other end of the conduit which is translatable so that the conduit is constrained to move in an arcuate path about the pivot point.



**729 With noncircular coverage:**

This subclass is indented under subclass 728. Apparatus including means to vary the radial extent of the treated area from the pivot point at certain distinct intervals along the arcuate path of the apparatus so that a noncircular area is irrigated.

- (1) Note. Movement of the center pivot irrigator may be temporarily stopped at specific points along its arcuate path to affect the noncircular pattern of coverage.

**730 Including means allowing articulation of adjacent pipe sections:**

This subclass is indented under subclass 728. Apparatus wherein the conduit is comprised of a plurality of elongated conduited sections which are coaxially connected together in end-to-end fluid-conducting relationship so as to form the elongated supply conduit or fluid distributing line, the connection between any two adjacent conduit sections being such that one conduit section is permitted to flex or pivot relative to an adjacent conduit section about an axis of the adjacent conduit section so that deviations from a straight line alignment between adjacent conduit sections are permitted.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 732, for means allowing articulation of adjacent pipe sections on a translating distributor.

**731 With means to detect misalignment:**

This subclass is indented under subclass 730. Apparatus including sensing means, operatively associated with the conduit, to detect when the longitudinal axis of any one conduit section deviates from a straight line relationship with the longitudinal axis of an adjacent conduit section.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 733, for means to detect mis-alignment of pipe sections on a translating distributor.

**732 Including means allowing articulation of adjacent pipe sections:**

This subclass is indented under subclass 726. Apparatus wherein the conduit is comprised of a plurality of elongated conduit sections which are coaxially connected together in end-to-end fluid-conducting, relationship so as to form the elongated supply conduit or fluid distributing line, the connection between any two adjacent conduit sections being such that one conduit section is permitted to flex or pivot relative to an adjacent conduit section about an axis generally perpendicular to the longitudinal axis of the adjacent conduit section so that deviations from a straight-line alignment between adjacent conduit sections are permitted.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 730, for center pivot irrigators including means allowing articulation of adjacent pipe sections.

**733 With means to detect misalignment:**

This subclass is indented under subclass 732. Apparatus including sensing means, operatively associated with the conduit, to detect when the longitudinal axis of any one conduit section deviates from a straight line relationship with the longitudinal axis of an adjacent conduit section.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 703, for center pivot irrigators with means to detect misalignment of adjacent pipe sections.

**734 Trail tube:**

This subclass is indented under subclass 726. Apparatus including an elongated fluid conductor, secured in fluid conducting relationship, to the conduit in such a manner that the longitudinal axis of the fluid conductor is generally perpendicular to the longitudinal axis of the conduit, and wherein the fluid conductor is disclosed as either having or being intended to have sprinkler or other spray outlet means formed therein or secured thereto for sprinkling or spraying fluid onto the ground.

**735 Propelling means:**

This subclass is indented under subclass 726. Apparatus provided with a means for moving the distributor bodily across an areas to be irrigated.

SEE OR SEARCH THIS CLASS, SUBCLASS:

744+, for propelling means for mobile distributors of the nonpipeline type.

**736 Reel take-up:**

This subclass is indented under subclass 735. Apparatus wherein the means for moving the distributor comprises an elongated flexible member and a rotary means which takes in or winds up the elongated flexible member to cause motion of the distributor.

(1) Note. The flexible member may be either a cable, wire or the like tether, or the supply line itself.

SEE OR SEARCH THIS CLASS, SUBCLASS:

195+, for flexible flow line or outlet storage and retrieval means.

745, for a reel take-up drive on a nonpipeline type distributor.

SEE OR SEARCH CLASS:

242, Winding, Tensioning, or Guiding, subclasses 370+ for a reeling device for elongated material which may include a hose.

**737 Prime mover:**

This subclass is indented under subclass 735. Apparatus having a self-contained power source mounted thereon which causes movement of the distributor.

**738 Fluid motor or spray fluid operated:**

This subclass is indented under subclass 735. Apparatus having means responsive to the flow of fluid in the supply line or from its discharge from the egress ports to cause movement of the distributor.

SEE OR SEARCH THIS CLASS, SUBCLASS:

237+, for spray fluid motor drive means and 263 for fluid motive means for non-

translating distributors moving relative a base during spraying.

747, for a fluid motor or spray fluid operated propelling means on a nonpipeline type of mobile distributor.

SEE OR SEARCH CLASS:

91, Motors: Expansible Chamber Type, appropriate subclasses for a fluid operated expansible chamber motor, per se, which may be used to propel the distributor in the absence of claimed structure to discharge the motor exhaust fluid through the distributor.

415, Rotary Kinetic Fluid Motors or Pumps, appropriate subclasses for a fluid operated motor, per se, which may be used to propel the distributor and for the combination of such a motor with a nominally recited distributor in the absence of claimed structure to discharge the motor exhaust fluid through the distributor.

418, Rotary Expansible Chamber Devices, for a rotary expansible chamber motor, per se, which may be used to propel the distributor and for the combination of such a motor with a nominally recited distributor in the absence of claimed structure to discharge the motor exhaust fluid through the distributor.

**739 Guided translating distributor:**

This subclass is indented under subclass 726. Apparatus including means constraining the distributor to bodily move along a predetermined path or course.

SEE OR SEARCH THIS CLASS, SUBCLASS:

743+, for a guided translating distributor of the nonpipeline type.

**740 Supply line traversing means:**

This subclass is indented under subclass 739. Apparatus wherein the distributor is guided along a path established by the relative disposition of a fluid conducting conduit which furnishes fluid to the distributor.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 736, for supply traversing pipeline distributors which are propelled by reeling in the supply line.  
 745+, for supply line traversing distributors of the nonpipeline type which are propelled by reeling in the supply line.  
 748, for supply line traversing guided distributors of the nonpipeline type.
- 741 Wheel mounted for rotation about longitudinal axis of pipeline:**  
 This subclass is indented under subclass 726. Apparatus wherein the vehicular support means comprises wheel means secured to the pipeline in such a manner that the peripheral portion of the wheel means rotates or circumferentially moves about the longitudinal axis of the pipeline during movement of the pipeline over the ground.
- 742 Longitudinal movement of pipeline:**  
 This subclass is indented under subclass 726. Apparatus in which the structure and arrangement of the vehicular means permit the pipeline to be moved in the direction of its length.
- 743 Propelled or guided translating distributor:**  
 This subclass is indented under subclass 723. Apparatus provided with either (1) a means constraining the distributor to move along a predetermined path or (2) means moving said distributor bodily.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 735+, for a propelling means for a mobile pipeline.  
 739, for a guided translating pipeline.
- 744 Propelling means:**  
 This subclass is indented under subclass 743. Apparatus provided with means for bodily moving the distributor.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 735+, for propelling means for mobile pipeline distributors.
- 745 Reel take-up:**  
 This subclass is indented under subclass 744. Apparatus wherein the means for moving the distributor comprises an elongated flexible member to cause motion of the distributor.
- (1) Note. The flexible member may be a cable, wire or the like tether; or the supply line itself.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 195+, for flexible flow line or outlet storage or retrieval means.  
 736, for a reel take-up drive on a pipeline type distributor.
- SEE OR SEARCH CLASS:  
 242, Winding, Tensioning, or Guiding, subclasses 370+ for a reeling device for elongated material which may include a hose.
- 746 Intermittent grip or inching type:**  
 This subclass is indented under subclass 744. Apparatus in which the motive means for the mobile distributor is such that it causes a step-by-step or go-stop-go type of advance usually by employing a reciprocating or oscillating pushing or pulling means along a flexible member.
- (1) Note. The flexible member may be a cable wire, or the like element which acts as either (1) a rail by having both ends fixed in position to thereby establish a predetermined pathway constraining the distributor as to the route it will travel or (2) a tether by having one end attached to the distributor and the other end fixed in position thereby constraining freedom of movement of the distributors about that fixed position.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 740, for a supply line traversing means on a guided translating pipeline type of distributor.

## SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 126+ oscillating or reciprocating to intermittent unidirectional motion.

**747 Fluid motor or spray fluid operated:**

This subclass is indented under subclass 744. Apparatus having means responsive to the flow of fluid in the supply line or from its discharge from the egress line ports to cause movement of the distributor.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

237, for spray fluid motor drive means.  
263, for fluid motive means for nontranslating distributors moving relative a base during spraying.  
738, for a fluid motor or spray fluid operated propelled means on a pipeline type of mobile distributor.

## SEE OR SEARCH CLASS:

91, Motors: Expansible Chamber Type, appropriate subclasses for a fluid operated expansible chamber motor, per se, which may be used to propel the distributor and for the combination of such a motor with a nominally recited distributor in the absence of claimed structure to discharge the motor exhaust fluid through the distributor.  
415, Rotary Kinetic Fluid Motors or Pumps, appropriate subclasses for a fluid operated motor, per se, which may be used to propel the distributor and for the combination of such a motor with a nominally recited distributor in the absence of claimed structure to discharge the motor exhaust fluid through the distributor.  
418, Rotary Expansible Chamber Devices, appropriate subclasses for a rotary expansible chamber motor, per se, which may be used to propel the distributor and for the combination of such a motor with a nominally recited distributor in the absence of claimed structure to discharge the motor exhaust fluid through the distributor.

**748 Supply line traversing means:**

This subclass is indented under subclass 743. Apparatus wherein the distributor is guided along a path established by the relative disposition of a fluid conducting conduit which furnishes fluid to the distributor.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

740, for supply line traversing means on pipeline distributors.

**749 Hydrant coupling:**

This subclass is indented under subclass 748. Apparatus wherein the supply line is provided with valved outlets spaced there along and the distributor has means to connect, in fluid conducting relationship with the outlets as it traverses along the supply line thereby providing fluid to the distributor.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

740, for pipeline distributors which may include hydrant coupling structure.

**750 Track or guideway:**

This subclass is indented under subclass 722. Apparatus having rail means or some predetermined and established pathway which constrains carrier as to the route it will travel.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

173+, for track guided mobile tank type sprayers.  
724+, for mobile irrigators with track means associated with open type supply confirming means.  
739+, for mobile pipeline irrigators which are track guided.  
743+, for mobile irrigators in general which are track guided.

**751 Overhead type:**

This subclass is indented under subclass 750. Apparatus in which the track or guideway is for suspended distributing means supported therefrom and constrained to move therealong.

**752 Reciprocating:**

This subclass is indented under subclass 750. Apparatus in which the means mounting the distributing means travels back and forth along the rail or pathway means such that the limits of translation of the device are thereby defined.

**753 With extensible support:**

This subclass is indented under subclass 752. Apparatus in which the fluid spraying means is formed of sections such that the member can be elongated or projected and retracted relative the supporting carriage.

**754 Jet directed toward or along supporting surface (e.g., lawn rake):**

This subclass is indented under subclass 722. Apparatus wherein the vehicular means supports the distributor above a surface and a spray means is disclosed as adapted to direct a fluid jet across or against said supporting surface during translation of the support.

- (1) Note. The supporting surface may be a lawn, floor, carpet, road, or the like.

## CROSS-REFERENCE ART COLLECTIONS

**900 ELECTROMAGNETICALLY ACTUATED FUEL INJECTOR HAVING BALL AND SEAT TYPE VALVE:**

A collection of art disclosing useful details of electromagnetically actuated fuel injector valves having a spherical or part spherical surface cooperating with a valve seat.

END