B05B

SPRAYING APPARATUS; ATOMISING APPARATUS; NOZZLES (spray-mixers with nozzles B01F 25/72; processes for applying liquids or other fluent materials to surfaces by spraying B05D)

Definition statement

This place covers:

Apparatus for the release or projection of drops or droplets into the atmosphere or into a chamber to form a mist or the like. The materials to be projected may be suspended in a stream of gas or vapour.

Apparatus as above, for the release or projection of streams or sprays of other fluent materials, e.g. particulate material entrained in a gas, into the atmosphere or into a chamber.

Nozzles or guns for the release of gas only, e.g. air or blowing guns or nozzles.

Projection of droplets of coating material out of numerous closely spaced nozzles by using an inkjet technology to form plain, i.e. not patterned, coating.

Examples of such apparatus, and subcomponents thereof covered by this subclass, include:

- Nozzles, spray heads, shower heads, roses, perforated pipes, spouts or other outlets, with or without auxiliary devices such as valves or heating means.
- Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements.
- Electrostatic spraying apparatus or installations.
- Spraying apparatus for discharge of liquids or other fluent materials from two or more sources, e.g. of liquid and air or powder and gas.
- Single-unit, i.e. unitary, hand-held apparatus in which flow of liquid is produced by the operator at the moment of use, e.g. by pumping, by squeezing a liquid container or by compressing a compressible bulb.
- Spraying plants, e.g. with means for supporting or feeding work; spray booths.
- Other spraying-type machines or apparatus, including fountains.
- Means for heating, mixing or pressurising of gases, liquids or other fluent materials that are sprayed, sprinkled, misted, released or projected using the apparatus of this subclass.
- Delivery control means or other details or accessories for use with the apparatus of this subclass.

Relationships with other classification places

Subclass B05C relates to apparatus for applying liquids or other fluent materials to surfaces in general. This subject matter generally relates to contact methods, e.g. spreading, pouring, dipping, rubbing, or using rollers or fluidized bed techniques, but not to spraying or atomising apparatus that is covered by subclass B05B. Also, subclass B05C relates to apparatus for projecting liquids or other fluent materials onto surfaces (group B05C 5/00) or to the inside of hollow work (subgroup B05C 7/02), and further to apparatus specially adapted for the projection of particulate material onto surfaces (subgroup B05C 19/04). In subclass B05C, 'projection' relates to the application of a continuous stream of liquid or other fluent (e.g. particulate) material to a surface. In subclass B05B, 'projection' relates to the release of a discontinuous stream of drops, droplets or a cloud of particulate material into the atmosphere or into a chamber to form a mist or the like.

Subclass B05D relates to processes (including processes performed by spraying) for applying liquids or other fluent materials to surfaces, in general.

References

Limiting references

This place does not cover:

Spray-mixers with nozzles	B01F 25/72
Processes for applying liquids or other fluent material to surfaces by spraying	B05D

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Dispensing fittings for drip irrigation, e.g. drippers	A01G 25/023
Special adaptations or arrangements of liquid-spraying apparatus for the destruction of noxious animal or plants	A01M 7/00
Dispensers for soap	A47K 5/06
Nozzles for bathing devices for special therapeutic or hygienic purposes	A61H 33/00
Sprayers or atomisers specially adapted for therapeutic purposes	A61M 11/00
Inhalators	A61M 15/00
Nozzles specially adapted for fire-extinguishing	A62C 31/02
Apparatus for spreading or distributing liquids or other fluent materials already applied to a surface with a blast of gas or vapour	B05C 11/06
Cleaning by the force of jets, e.g. blowing-out cavities	B08B 5/02
Spray nozzles, nozzle headers or spray systems for cooling in metal-rolling mills	B21B 45/0233
Nozzles for working by laser beam using a fluid stream	B23K 26/14
Machines or devices for abrasive blasting with particulate material	B24C 3/00
Multi-way nozzles specially adapted for injection moulding in making multilayered or multicoloured articles	B29C 45/1603
Nozzles for injection moulding	B29C 45/20
Nozzles for ink-jet printing mechanisms	B41J 2/135
Arrangement of nozzles specially adapted for liquid supply in the cleaning of windscreens, windows or optical devices of vehicles	B60S 1/52
Dropping or releasing powdered, liquid or gaseous matter in flight by spraying, e.g. insecticides	B64D 1/18
Nozzles for introducing articles or materials into containers or wrappers	B65B 39/00
Nozzles for delivery of liquid or semi-liquid contents by internal gaseous pressure	B65D 83/28
Filling nozzles for transferring liquid from bulk storage containers or reservoirs into vehicles or into portable containers, e.g. in vehicle service stations	B67D 7/42
Spray quenching devices for heat treatment of metals or alloys	C21D 1/667
Nozzles for drilling by liquid or gas jets	E21B 7/18
Supplying combustion engines in general with combustible mixtures or constituents thereof	F02M

Nozzles used in connection with end fittings of hoses	F16L 35/005
Atomising devices for mist lubrication	F16N 7/34
Burners	F23D

Informative references

Attention is drawn to the following places, which may be of interest for search:

Watering gardens, fields, sports grounds or the like	A01G 25/00
Concentration, evaporation or drying of dairy by spraying into a gas stream	A23C 1/04
Processes for coating of sweetmeats or confectionery with atomised liquid, droplet bed or liquid spray	A23G 3/0089
Apparatus for coating or filling sweetmeats or confectionery with atomised liquid or liquid spray	A23G 3/2092
Pouring spouts of cooking-vessels	A47J 36/14
Spraying devices for supplying cleaning or surface treating agents for cleaning floors, carpets, furniture, walls or wall coverings	A47L 11/4088
Dish washing or rinsing machines with spraying devices	A47L 15/00
Disinfection, sterilisation or deodorisation of air using sprayed or atomised substances	A61L 9/14
Separation	B01D
Processes or devices for granulating materials by dividing liquid material into drops and solidifying the drops	B01J 2/02
Making microcapsules or microballoons by physical processes	B01J 13/04
Cleaning in general by methods involving the use or presence of a liquid	B08B 3/00
Making metallic powder by atomising or spraying	B22F 9/08
Accessories fitted to machine tools for keeping tools or parts of the machine in good working condition or for cooling work	B23Q 11/00
Manipulators for painting or coating	B25J 11/0075
Severing by means of a fluid jet	B26F 3/004
Coating by incorporating preformed parts or layers for making articles of definite length during shaping by casting of material in a plastic state	B29C 39/10
Coating by incorporating preformed parts or layers for making articles of indefinite length during shaping by casting of material in a plastic state	B29C 39/18
Coating by incorporating preformed parts or layers for making articles of definite length during shaping by coating a mould, core or other substrate of material in a plastic state	B29C 41/20
Coating by incorporating preformed parts or layers for making articles of indefinite length during shaping by coating a mould, core or other substrate of material in a plastic state	B29C 41/30
Coating by incorporating preformed parts or layers for making articles of definite length during shaping by compression moulding of material in a plastic state	B29C 43/18
Coating by incorporating preformed parts or layers for making articles of indefinite length during shaping by compression moulding of material in a plastic state	B29C 43/28

Coating by incorporating preformed parts or layers by injection moulding during shaping of material in a plastic state	B29C 45/14
Coating by incorporating preformed parts or layers by extrusion moulding during shaping of material in a plastic state	B29C 48/15
Layered products, methods or apparatus for making layered products, methods or apparatus for laminating, ancillary operations in connection with laminating processes or operations specially adapted for layered products and not otherwise provided for	B32B
Aerosol containers	B65D 83/14
Conveying articles or workpieces through baths of liquid	B65G 49/02
Surface treatment of glass, not in the form of fibres or filaments, by coating	C03C 17/00
Surface treatment of fibres made from glass, minerals or slags by coating	C03C 25/10
Coating or impregnating after-treatment of mortars, concrete, stone or ceramics	C04B 41/45
Coating or impregnation after-treatment of only artificial stone	C04B 41/61
Coating or impregnation after-treatment of only ceramics	C04B 41/81
Coating compositions, e.g. paints, varnishes or lacquers	C09D
Coating metallic material; Coating material with metallic material; Surface treatment of metallic material by diffusion into the surface, by chemical conversion or substitution; Coating by vacuum evaporation, by sputtering, by ion implantation or by chemical vapour deposition, in general	C23C
Processes for the electrolytic or electrophoretic production of coatings, e.g. electroplating; Electroforming; Apparatus therefor	C25D
Treating of textile materials by liquids, gases or vapours	D06B
Treating roads	E01C
Pillar fountains or like apparatus for dispensing drinking water, e.g. drinking fountains	E03B 9/20
Jet regulators or jet guides, e.g. anti-splash devices, for fresh water taps	E03C 1/08
Positive-displacement machines for liquids; Pumps for liquids or elastic fluids	F04
Valves; Taps, e.g. water-taps	F16K
Burners using a direct spraying action of liquid droplets or vaporised liquid into the combustion space	F23D 11/00
Liquid ejecting guns, e.g. water pistols	F41B 9/00
Measuring volume, flow or liquid level, e.g. dosing	G01F
Manufacturing of record carriers	G11B 7/26
Manufacture or treatment of semiconductors or solid-state devices, or of parts thereof	H01L 21/00
Manufacture or treatment of individual inorganic light-emitting semiconductor devices having potential barriers, e.g. light-emitting diodes [LED]	H10H 20/01

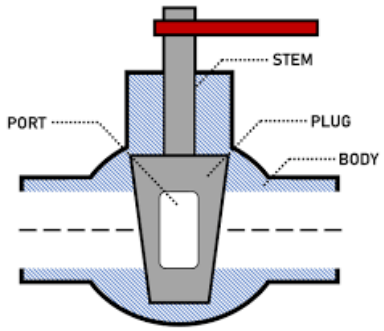
Special rules of classification

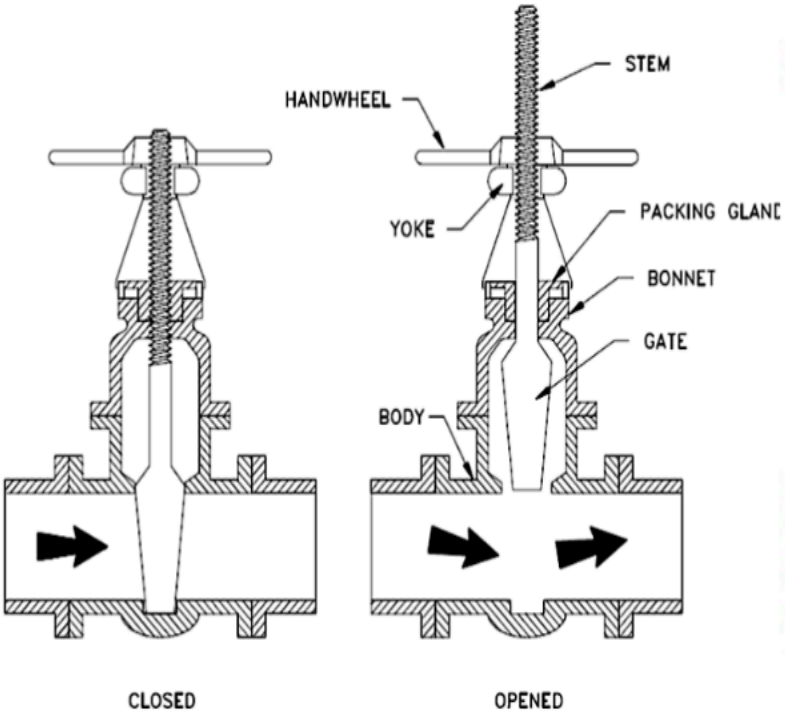
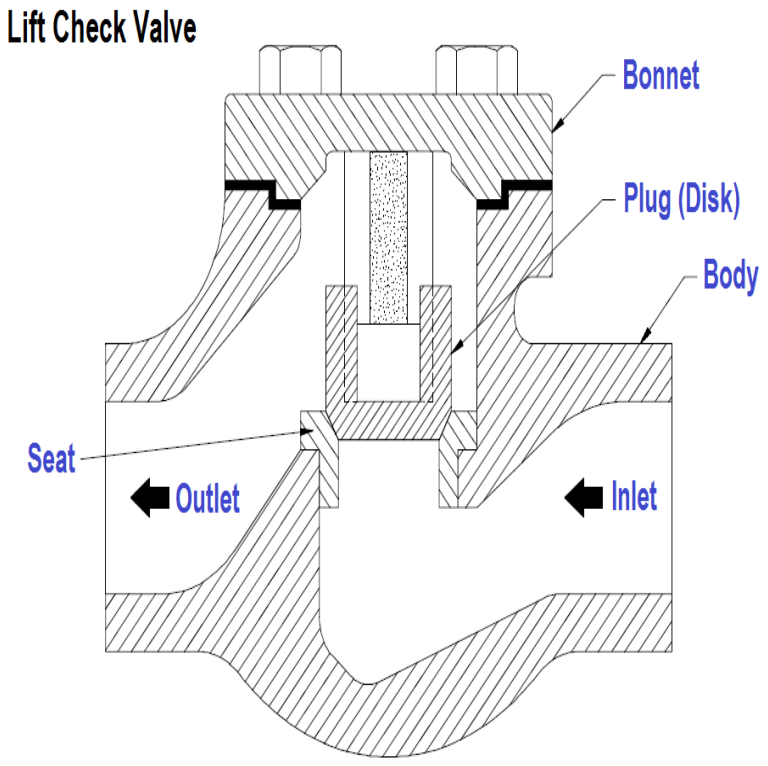
Apparatus for applying fluent materials to surfaces, in general, e.g. arrangements for cleaning discharge openings, devices or dispensing heads, of apparatus belonging to subclass B05C are classified in the relevant place of B05C, as well as in B05B 15/50.

Considering the possible broad interpretation of the scope of subclass B05B, it is essential to pay attention to all references appearing in many titles of the B05B places. All devices relating to specific application fields are normally not classified in B05B unless some general function aspects are considered of relevance and are therefore (also) classified in subclass B05B.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

coating	the applied material. A coating may be a solidified layer originally applied as a liquid (e.g. dried paint) or a layer of material which, once applied, remains in a liquid or semi-liquid state (e.g. lubricant).
cock	a valve as defined in group F16K 5/00, i.e. a cut-off apparatus having at least one of the sealing faces shaped as a more or less complete surface of a solid of revolution, the opening and closing movement being predominantly rotary. The Figure illustrates body, plug, port and stem: 

gate valve or sliding valve	a valve as defined in group F16K 3/00, i.e. a cut-off apparatus with closure members having a sliding movement along the seat for opening and closing. The Figure illustrates a closed valve position and an opened valve position with body, gate, bonnet, packing gland, yoke, handwheel and stem: 
lift valve	a valve as defined in group F16K 1/00, i.e. a cut-off apparatus with closure members having at least a component of their opening and closing motion perpendicular to the closing faces. The Figure illustrates body, inlet, outlet, seat, plug (disk) and bonnet: 

liquid or fluent	designates materials that can flow, e.g. liquids, including solutions, dispersions, suspensions, semi-liquids, pastes, melts or particulate materials
particulate materials	solid materials in the form of very small pieces, e.g. powders, granules, short fibres or chips

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "to atomize", "to spray", "to nebulize", "to disperse", "to project", "to release", "to discharge" and "to dispense"
- "spray", "jet", "mist" and "discharge"

B05B 1/00

Nozzles, spray heads or other outlets, with or without auxiliary devices such as valves, heating means (B05B 3/00, B05B 5/00, B05B 7/00 take precedence; devices for applying liquids or other fluent materials to surfaces by contact B05C; nozzles for ink-jet printing mechanisms B41J 2/135; nozzles for liquid-dispensing, e.g. in vehicle service stations, B67D 7/42)

References

Limiting references

This place does not cover:

Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements	B05B 3/00
Electrostatic spraying apparatus; Spraying apparatus with means for charging the spray electrically; Apparatus for spraying liquids or other fluent materials by other electric means	B05B 5/00
Spraying apparatus for discharge of liquids or other fluent materials from two or more sources, e.g. of liquid and air, of powder and gas	B05B 7/00
Devices for applying liquids or other fluent materials to surfaces by contact	B05C
Nozzles for ink-jet printing mechanisms	B41J 2/135
Nozzles for liquid-dispensing, e.g. in vehicle service stations	B67D 7/42

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Nozzles for baths with water or gas jets	A61H 33/00
Nozzles specially adapted for fire-extinguishing	A62C 31/02
Nozzles for generating high velocity abrasive fluid jets	B24C 5/04
Additive manufacturing nozzles	B29C 64/209
Nozzles, funnels or guides for introducing articles or materials into containers or wrappers	B65B 39/00
Fuel-injection nozzles	F02M 61/18

Nozzles specially adapted for burners using a direct spraying action of liquid droplets into the combustion space	F23D 11/38

Informative references

Attention is drawn to the following places, which may be of interest for search:

Electroforming of hollow bodies, e.g. nozzles	C25D 1/02

B05B 1/002

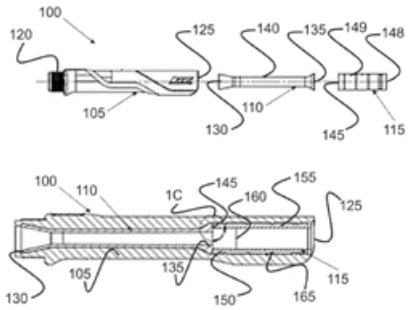
{designed to reduce the generation or the transmission of noise or to produce a particular sound; associated with noise monitoring means}

Definition statement

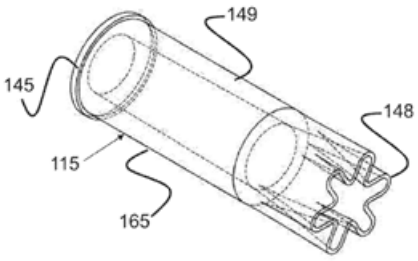
This place covers:

Illustrative examples of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate a noise suppressor (115) within a nozzle (100). The geometry of a suppressor (115) results in a reduction of aero-acoustic energy at certain operating pressures.

2.

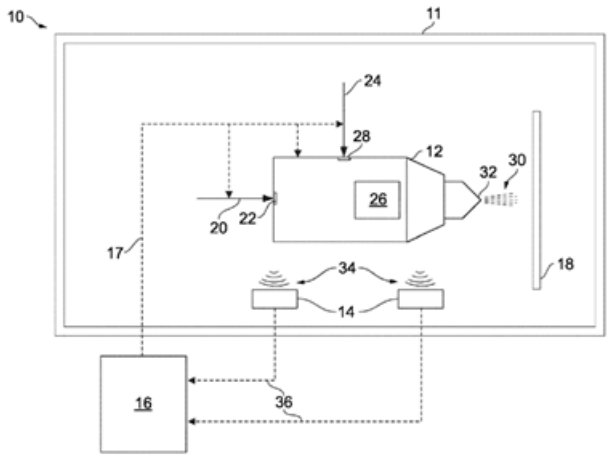


Figure 2 illustrates acoustic sensors (14) configured to sense acoustic signals (34) generated by one or more components or processes of a thermal spray system (10).

3.

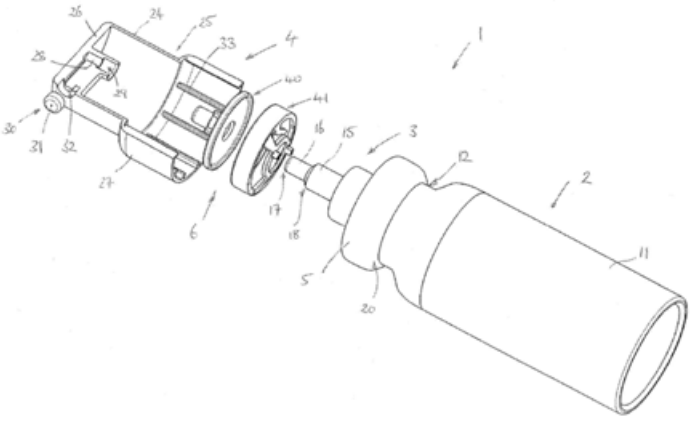


Figure 3 illustrates a handheld pump sprayer (1), wherein depression of an actuator (4) compresses a mechanical clicker (6). This compression is accompanied by an audible clicking sound that provides a clear and reliable indication to a user that stem (18) of a pump (3) has been sufficiently depressed.

4.

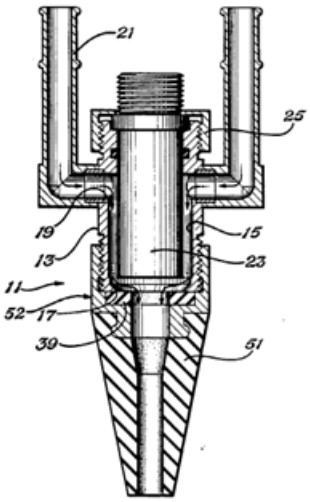


Figure 4 illustrates a ring (39) and nozzle (51) made of an elastomeric material containing metal oxide particles to absorb unwanted sound energy.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Methods or devices for protecting against, or for damping, noise or other acoustic waves in systems with fluid flow in general	G10K 11/161

B05B 1/005

{Nozzles or other outlets specially adapted for discharging one or more gases}

Definition statement

This place covers:

Illustrative examples of subject matter classified in this place:

1.

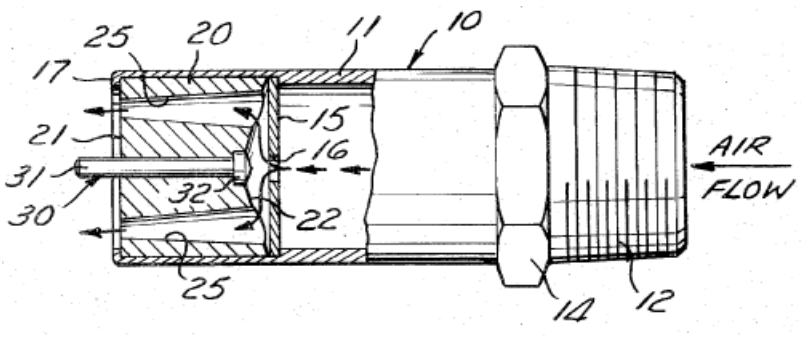


Figure 1 illustrates a nozzle (25) having multiple outlets (25) specially adapted for discharging air.

2.

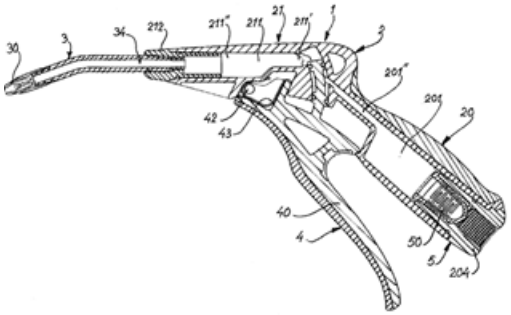


Figure 2 illustrates an air blow gun.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Gas streams controlling the spraying area	B05B 12/18
Blower devices for sweeping lawn debris	A01G 20/47
Gas nozzles for spreading liquids or other fluent materials already applied to a surface	B05C 11/06
Cleaning by the force of air or gas jets	B08B 5/02
Air blowing devices for filling or emptying large containers	B65D 88/703
Air knives or nozzles for drying	F26B 21/004
Compressed-gas guns; Steam guns	F41B 11/00

B05B 1/042

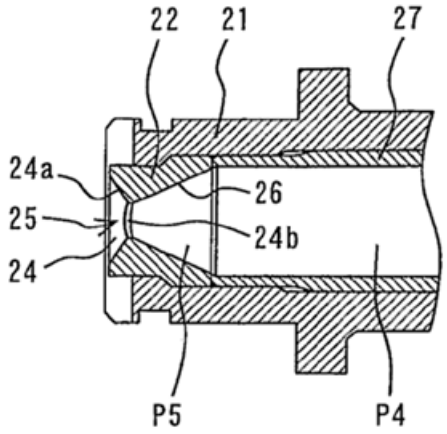
{Outlets having two planes of symmetry perpendicular to each other, one of them defining the plane of the jet (B05B 1/044, B05B 1/046 take precedence)}

Definition statement

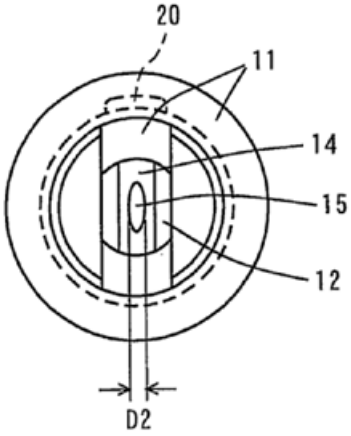
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate a perpendicular nozzle defining the plane of the jet.

References

Limiting references

This place does not cover:

Slits, i.e. narrow openings defined by two straight and parallel lips; Elongated outlets for producing very wide discharges	B05B 1/044
Outlets formed, e.g. cut, in the circumference of tubular or spherical elements	B05B 1/046

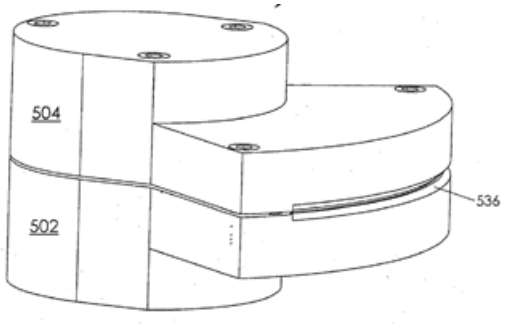
B05B 1/044

{Slits, e.g. narrow openings defined by two straight and parallel lips; Elongated outlets for producing very wide discharges, e.g. fluid curtains (B05B 1/046 takes precedence)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates two straight and parallel lips defining an elongated slotted outlet (536).

References

Limiting references

This place does not cover:

Outlets formed, e.g. cut, in the circumference of tubular or spherical elements	B05B 1/046

Informative references

Attention is drawn to the following places, which may be of interest for search:

Fountains designed to produce sheets or curtains of liquid	B05B 17/085

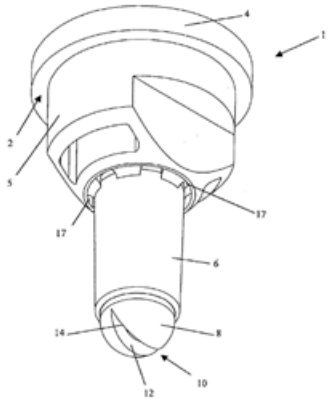
B05B 1/046

{Outlets formed, e.g. cut, in the circumference of tubular or spherical elements}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates an outlet (12) that is formed by a cut in the circumference of a spherical element (8).

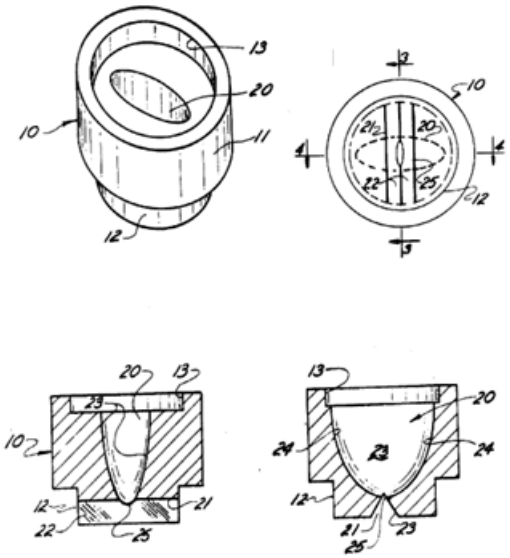
B05B 1/048

{having a flow conduit with, immediately behind the outlet orifice, an elongated cross section, e.g. of oval or elliptic form, of which the major axis is perpendicular to the plane of the jet}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a conduit (20) having an ellipse shaped cross-section, wherein the major axis of the conduit (20) is perpendicular to that of the plane of the jet.

B05B 1/06

in annular, tubular or hollow conical form

Definition statement

This place covers:

Illustrative examples of subject matter classified in this place:

1.

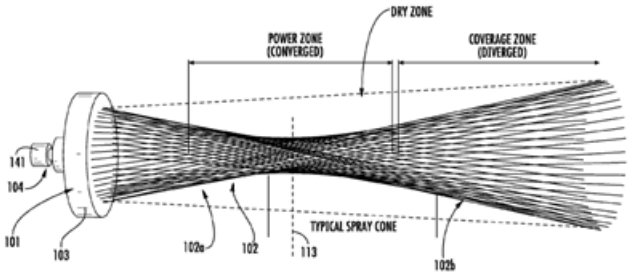


Figure 1 illustrates a spray jet (102) being shaped as a hollow conical form, which includes a dry zone line above and a typical spray zone line below, both divided into a power zone (converged toward the vertical line 113) nearest to the spray jet (101, 103 on the left) and a coverage zone (diverged toward the right side) beyond the power zone.

2.

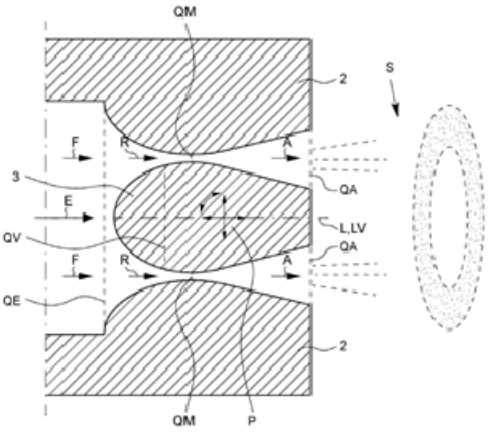


Figure 2 illustrates a spray jet (S) being annularly shaped.

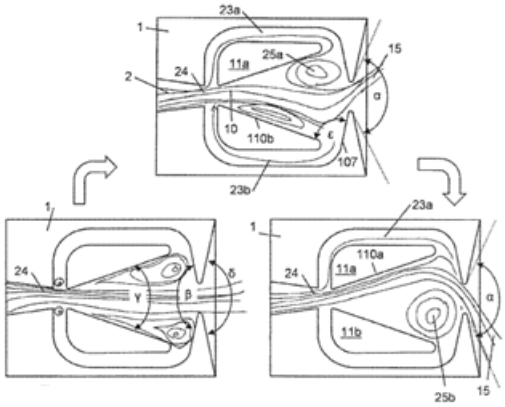
B05B 1/08

of pulsating nature, e.g. delivering liquid in successive separate quantities

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates fluidic oscillators.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Spraying apparatuses controlled to effect pulsating flow	B05B 12/06
Oscillators as circuit elements having no moving parts	F15C 1/22

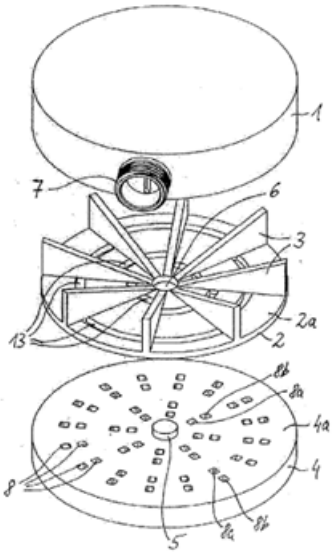
B05B 1/085

{rotated by the liquid or other fluent material discharged, e.g. liquid rotated turbines}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a liquid rotated turbine (2) being rotated by the fluid being discharged, thus producing a pulsating discharge.

B05B 1/0852

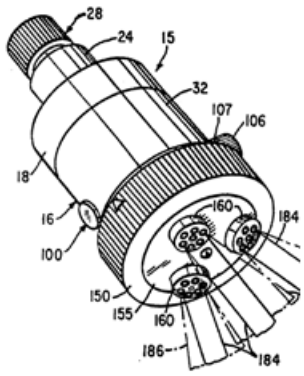
{the liquid or other fluent material actuating several pulsating mechanisms}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.

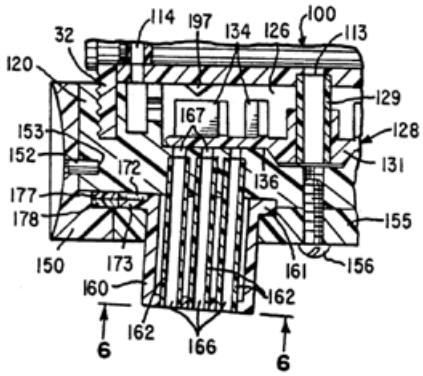


Figure 1a illustrates a shower head (15) comprising three cup-shaped discharge caps (160). Figure 1b illustrates a cap (160) comprising a turbine (128) creating a pulsating discharge.

B05B 1/0854

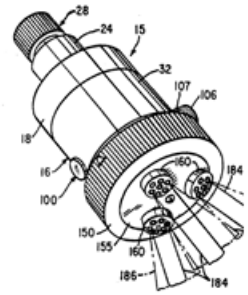
{the pulsating mechanism being provided with means for preventing rotation}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.

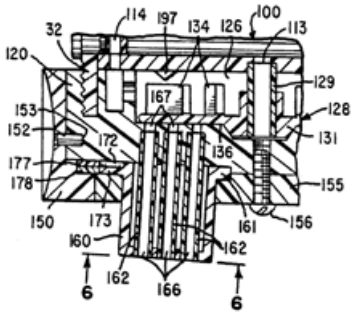


Figure 1a illustrates a shower head (15) comprising three cup-shaped discharge caps (160). Figure 1b illustrates each cap (160) comprising a turbine (128) creating a pulsating discharge. Rotation of the turbine (128) can be prevented by a stop (197).

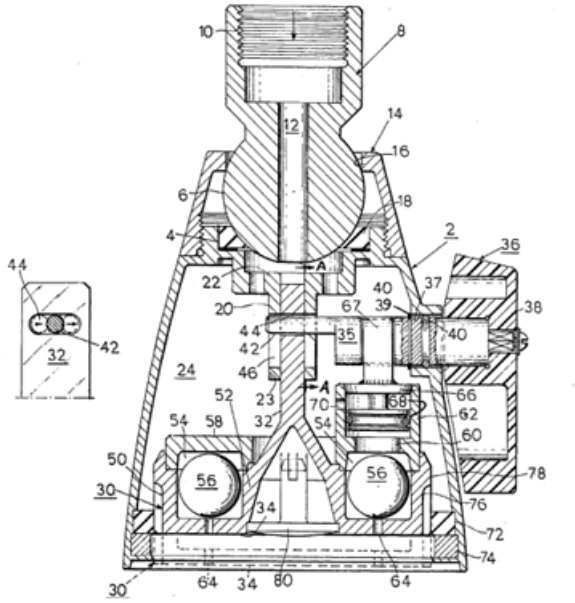
B05B 1/0856

{the pulsating mechanism comprising movable balls}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates how water flowing through openings (70) rotates balls (56) around annular channels (54) to successively cover and uncover openings (64), thereby causing the water to exit from these openings in the form of pulsating jets.

B05B 1/086

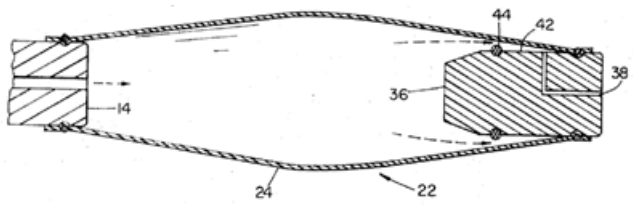
{with a resiliently deformable element, e.g. sleeve}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.

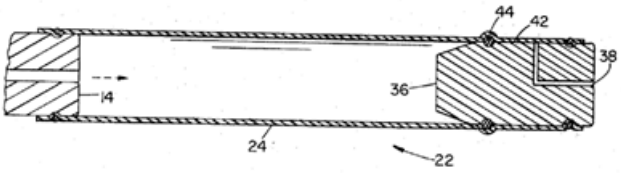


Figure 1a illustrates the expansion of a tube (24) enabling discharge through a channel (38). As the substance rushes out through the channel (38), the tube (24) collapses and returns to a configuration similar to that shown in Figure 1b. As this occurs, the seal between the tube (24) and an O-ring (44) once again becomes effective in Figure 1b, and the cycle will repeat, thus creating a pulsating discharge.

B05B 1/10

in the form of a fine jet, e.g. for use in wind-screen washers

Definition statement

This place covers:

Illustrative examples of subject matter classified in this place:

1a.

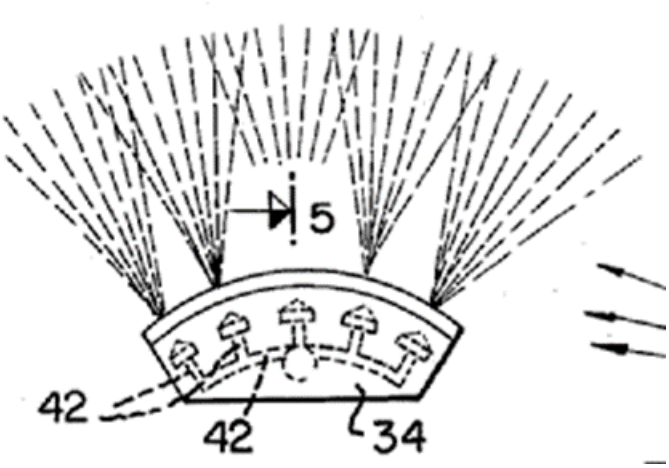


Figure 1a illustrates nozzles forming an array of fine jets.

1b.

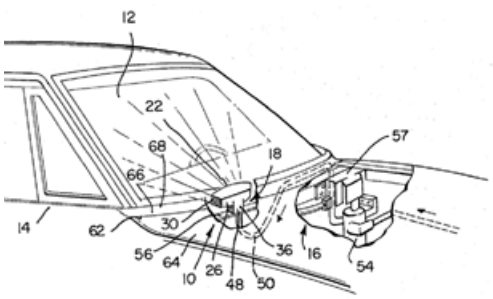


Figure 1b illustrates a nozzle array positioned onto a car windshield.

2.

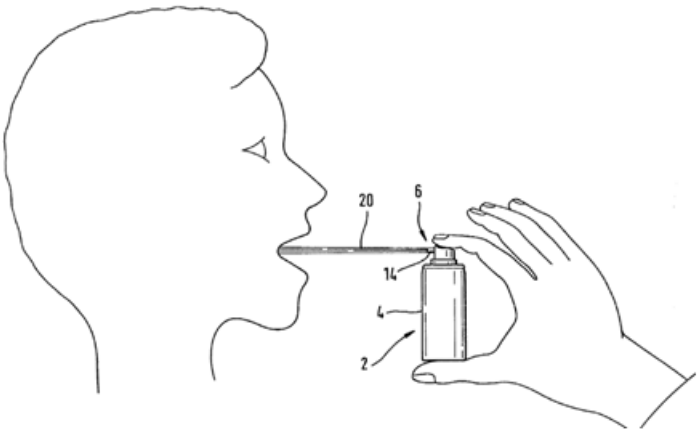


Figure 2 illustrates a nozzle (14) forming a single fine jet (20).

B05B 1/12

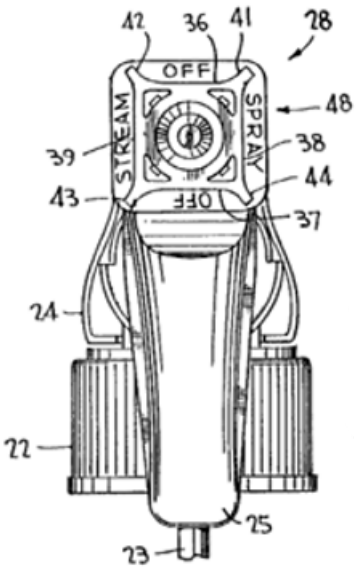
capable of producing different kinds of discharge, e.g. either jet or spray (having selectively-effective outlets B05B 1/16)

Definition statement

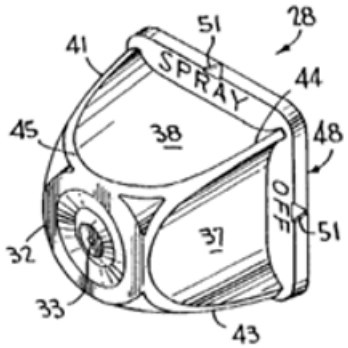
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate a singular outlet that is capable of producing different kinds of selected discharge, either spray or stream.

References

Limiting references

This place does not cover:

Nozzles with multiple outlet openings or strainers having selectively-effective outlets in or outside the outlet opening	B05B 1/16

B05B 1/14

with multiple outlet openings (B05B 1/02, B05B 1/26 take precedence); with strainers in or outside the outlet opening

References

Limiting references

This place does not cover:

Nozzles designed to produce a jet, spray or other discharge of particular shape or nature, or having an outlet of particular shape	B05B 1/02
Nozzles with means for mechanically breaking up or deflecting the jet after discharge; Nozzles with means for breaking up the discharged liquid or other fluent material by impinging jets	B05B 1/26

Informative references

Attention is drawn to the following places, which may be of interest for search:

Filters located upstream of the spraying outlets	B05B 15/40

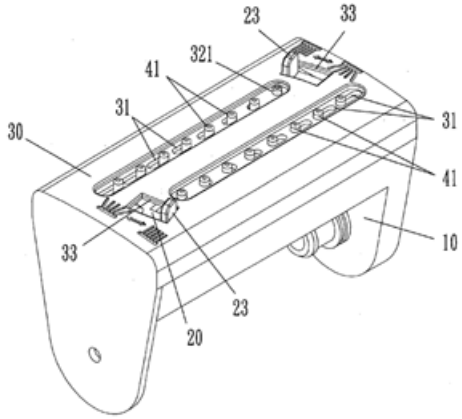
B05B 1/1422

{with all groups or rows being identical}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates two identical rows or groups of outlet openings (41).

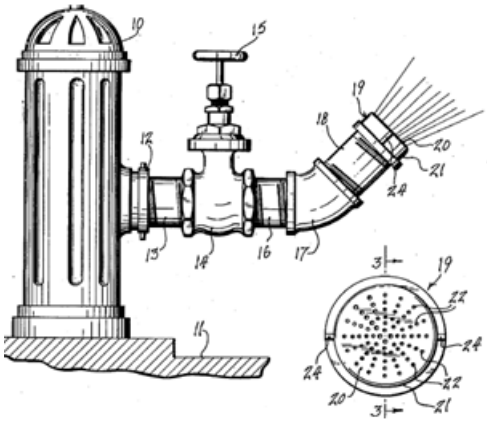
B05B 1/1423

{comprising concentric or coaxial groups}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates radial concentric or coaxial groups of outlet openings (22).

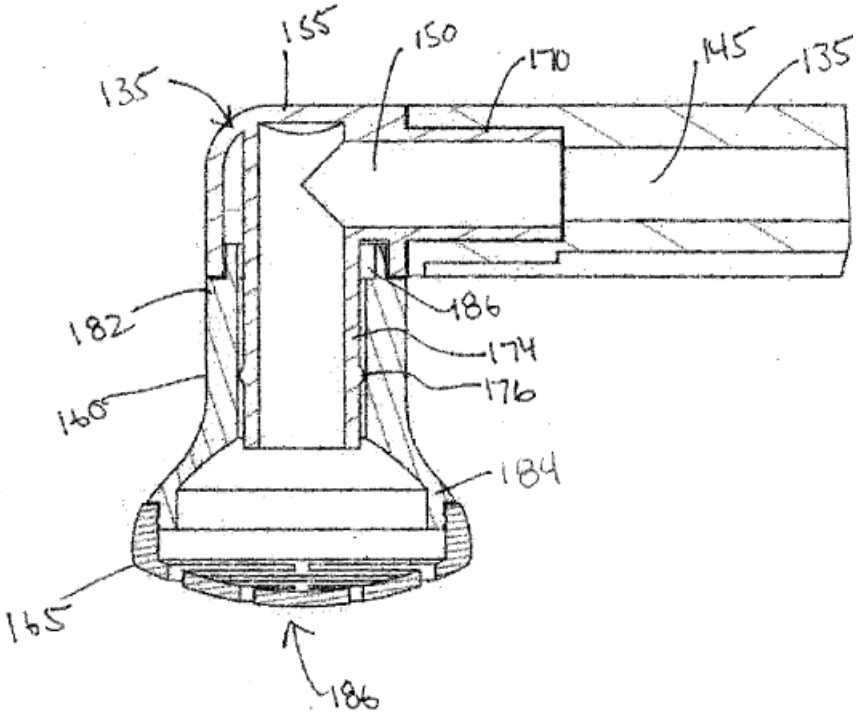
B05B 1/1424

{the outlet openings traversing a concavo-convex wall}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates multiple outlet openings (186) that go through a convex wall (165).

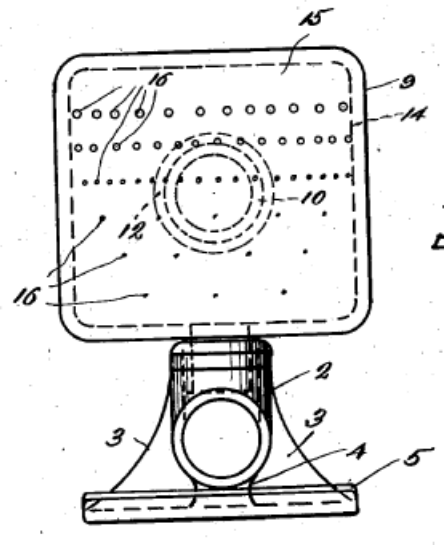
B05B 1/1425

{having three or more dissimilar groups or rows}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a plurality of dissimilar rows of orifices (16), the orifices (16) being arranged in three or more dissimilar rows.

B05B 1/1609

{with a selecting mechanism comprising a lift valve (B05B 1/1681 takes precedence)}

References

Limiting references

This place does not cover:

Nozzles with a selecting mechanism comprising a gate valve, sliding valve or cock and a lift valve	B05B 1/1681

Informative references

Attention is drawn to the following places, which may be of interest for search:

Lift valves in general	F16K 1/00

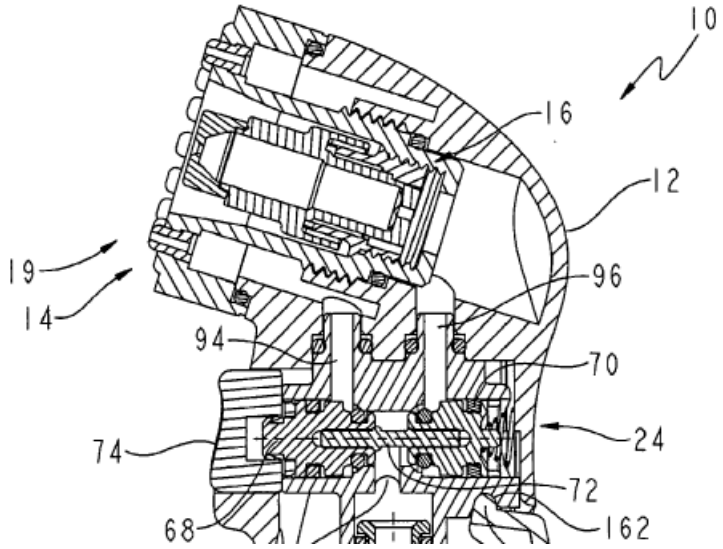
B05B 1/1618

{where said valve is a double-seat lift valve}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a valve assembly (24) that is actuated by a button (74), the valve assembly (24) having two valve seats allowing for two separate flows to be utilised.

B05B 1/1627

{with a selecting mechanism comprising a gate valve, a sliding valve or a cock (B05B 1/1681 takes precedence)}

References

Limiting references

This place does not cover:

Nozzles with a selecting mechanism comprising a gate valve, sliding valve or cock and a lift valve	B05B 1/1681

Informative references

Attention is drawn to the following places, which may be of interest for search:

Gate or sliding valves in general	F16K 3/00
Cocks in general	F16K 5/00

B05B 1/1636

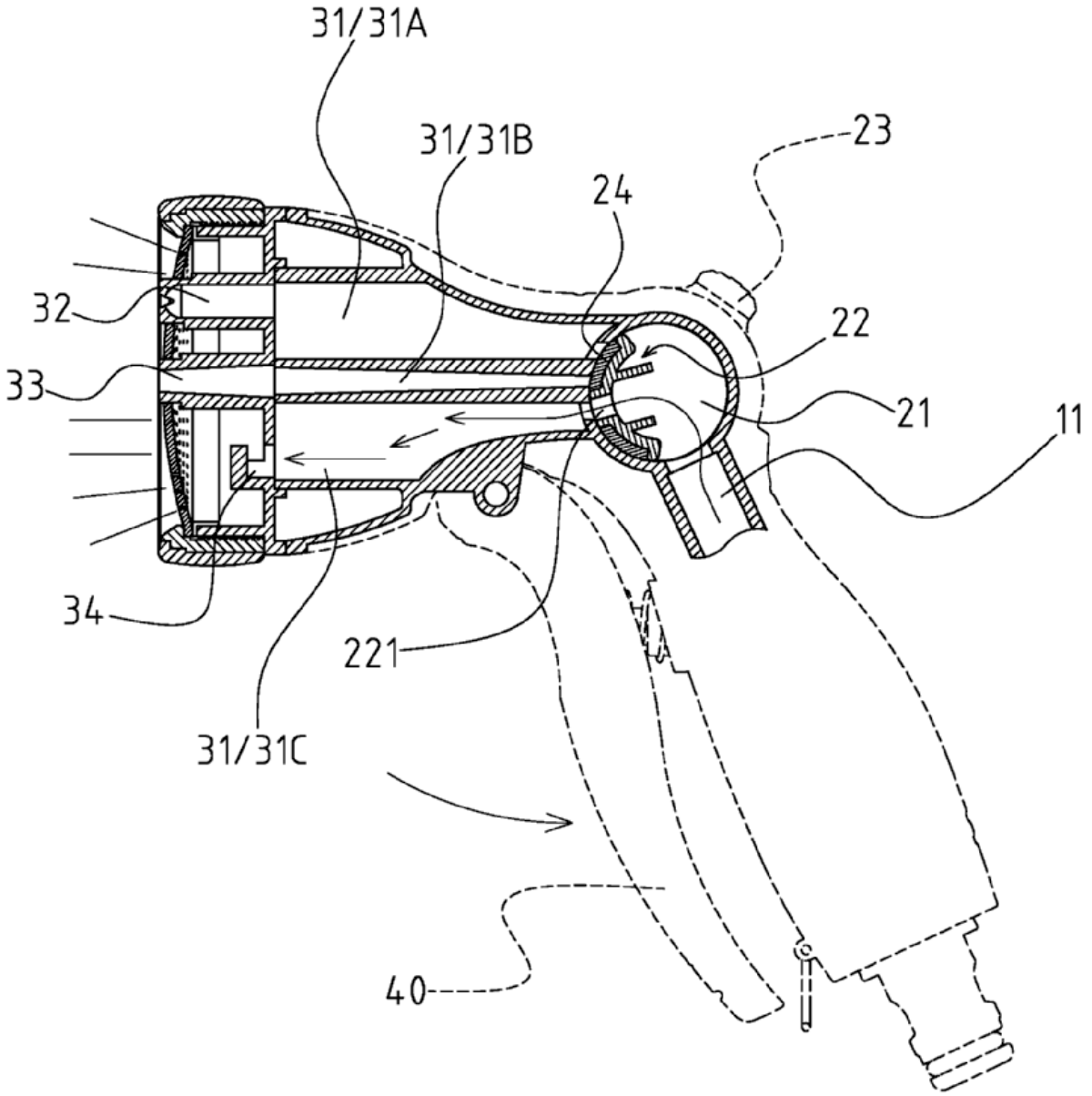
{by relative rotative movement of the valve elements (B05B 1/1672 takes precedence)}

Definition statement

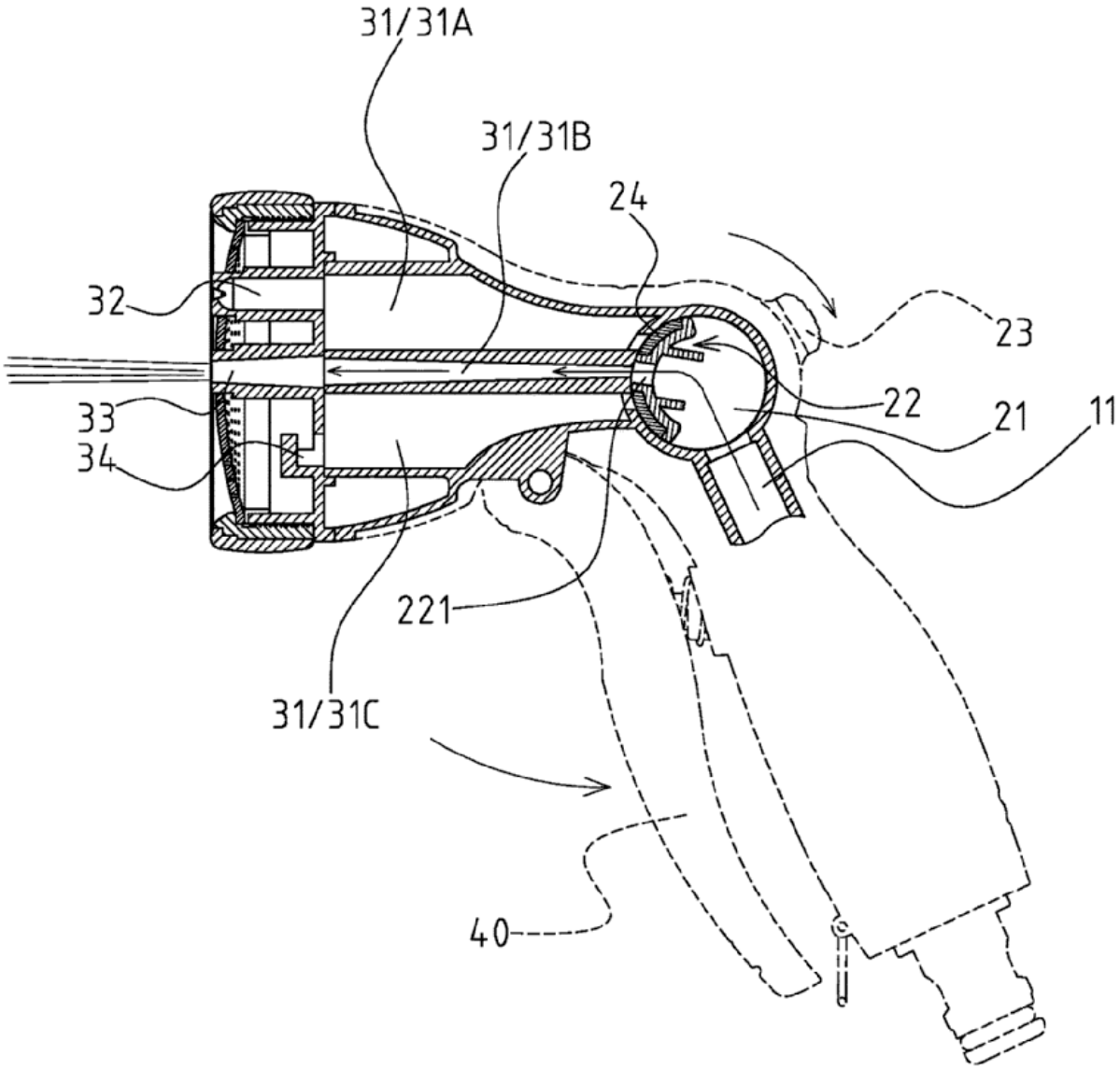
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate a water passage (221) that can be rotated to selectively bring either of the outlets (32) and (33) into fluid communication with a passage (11).

References

Limiting references

This place does not cover:

Nozzles with multiple outlet openings having selectively-effective outlets being arranged on a tube or pipe	B05B 1/1672

B05B 1/1645

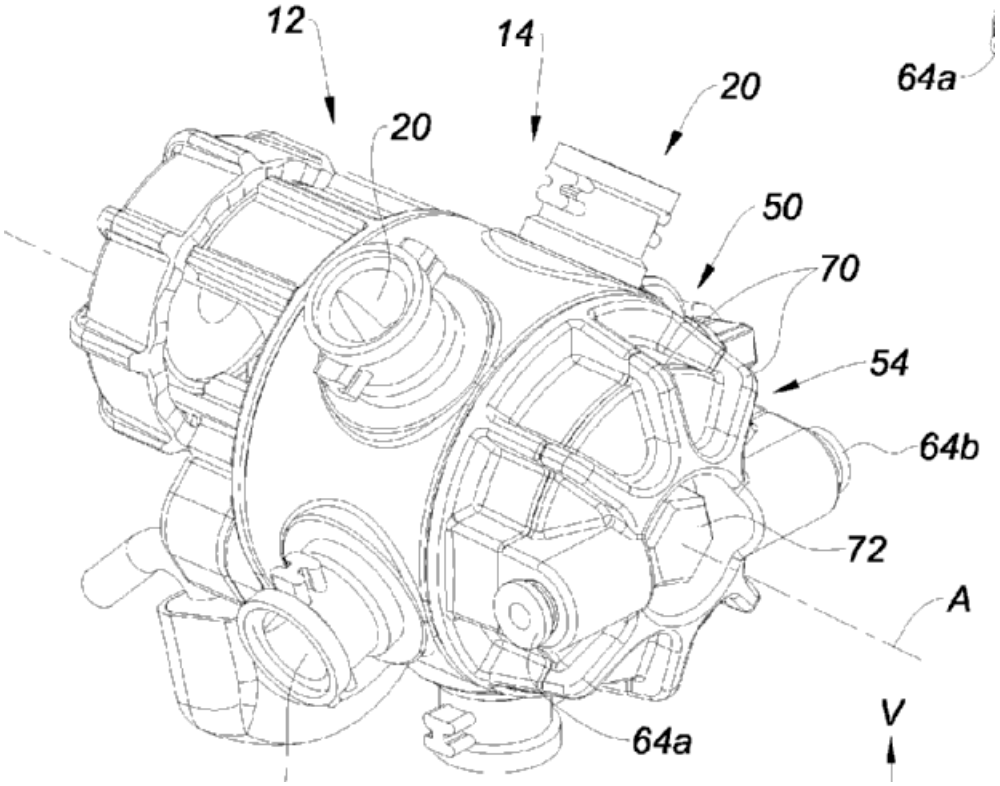
{the outlets being rotated during selection}

Definition statement

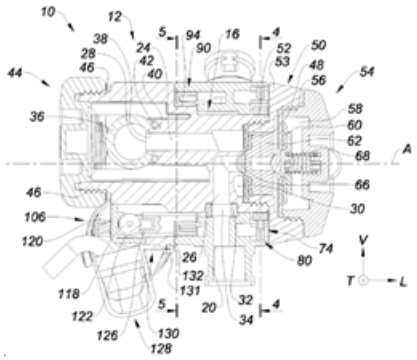
This place covers:

Illustrative examples of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate a turret (14) rotatably mounted on a body (12) around an axis (A) to bring one of the outlets (20) into fluid communication with an inlet passage (24).

2a.

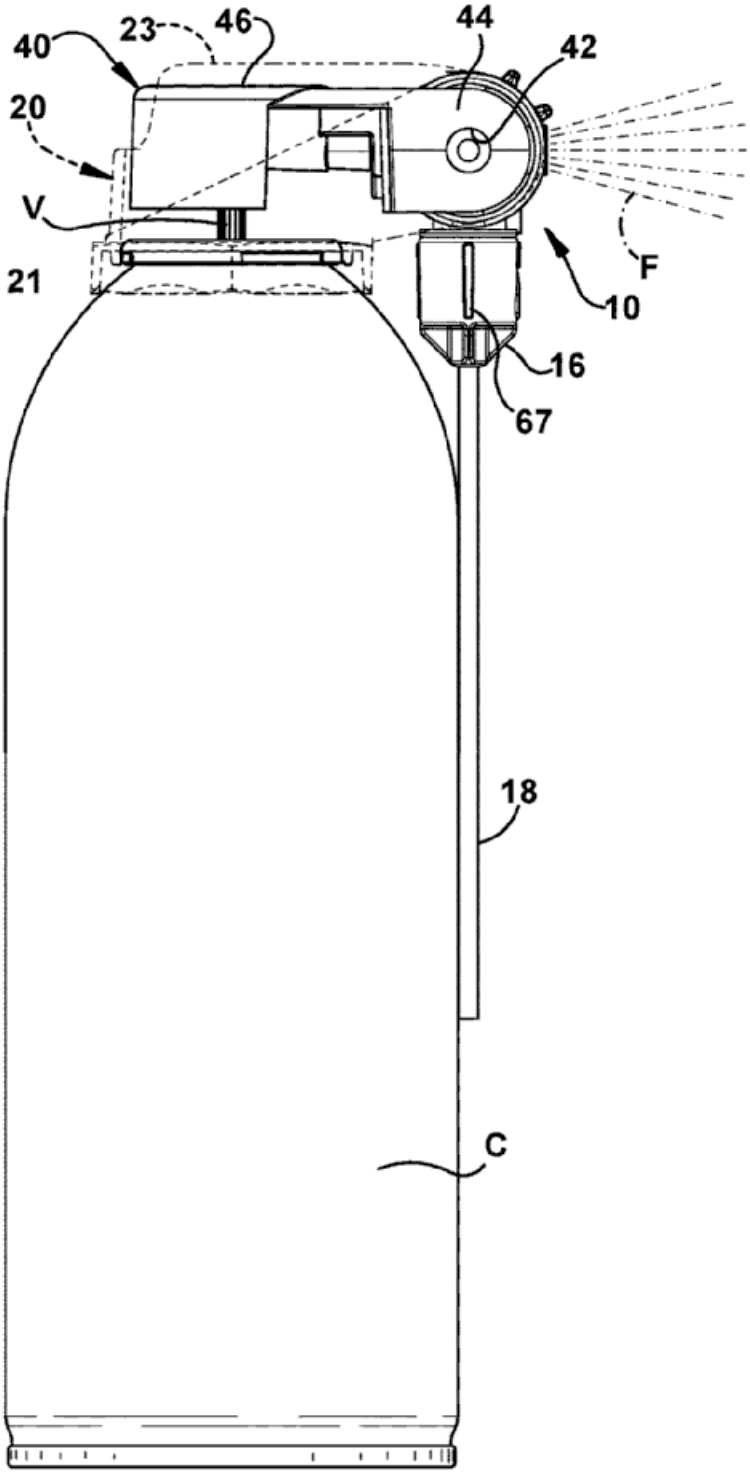


Figure 2a illustrates a downward position of an outlet tube (18) supplied by a rotatable valve assembly.

2b.

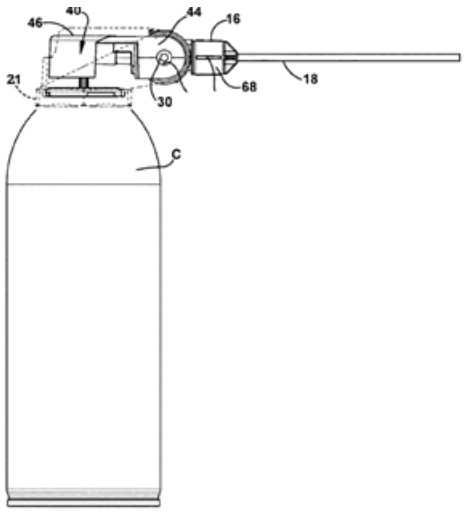


Figure 2b illustrates a horizontal position of an outlet tube (18) supplied by a rotatable valve assembly.

2c.

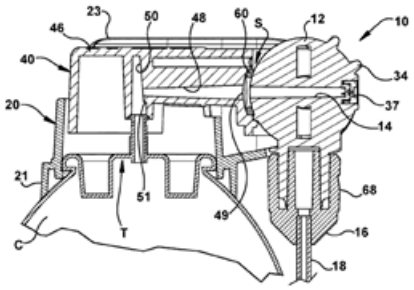


Figure 2c illustrates an expanded view of a rotatable valve assembly (12) enabling outlets (37) and (18) to be brought selectively into fluid communication with a passage (48).

B05B 1/1654

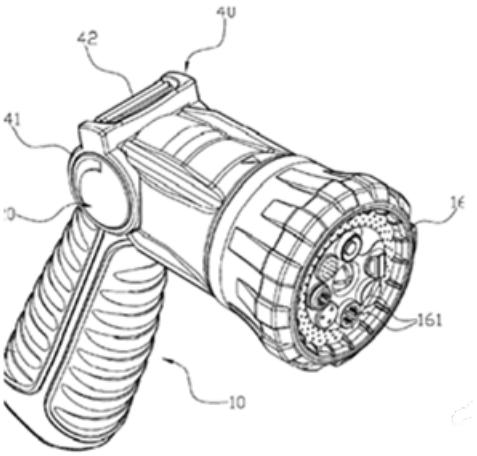
{about an axis parallel to the liquid passage in the stationary valve element}

Definition statement

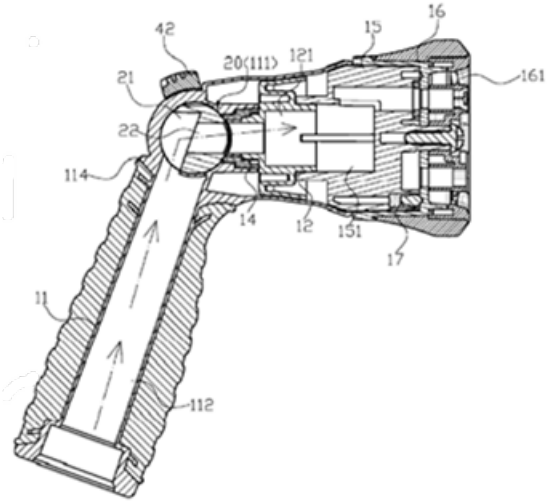
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate various outlets (161) rotatably mounted about an axis parallel to the liquid passage of the valve element.

B05B 1/1663

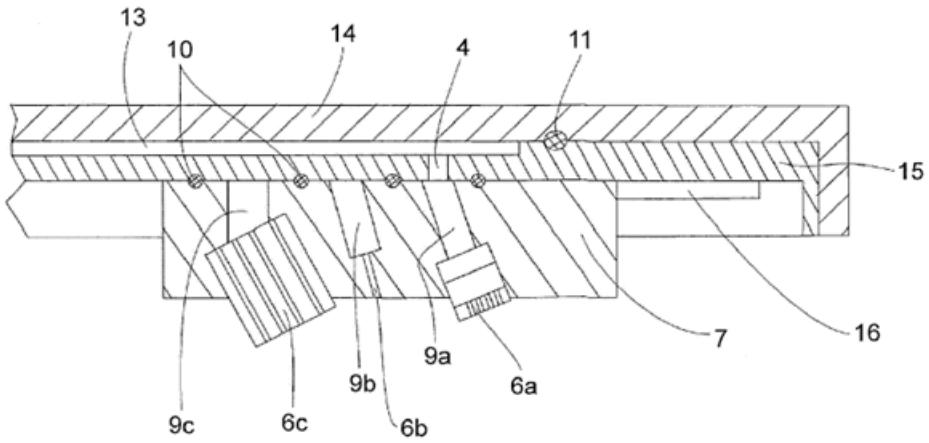
{by relative translatory movement of the valve elements (B05B 1/1672 takes precedence)}

Definition statement

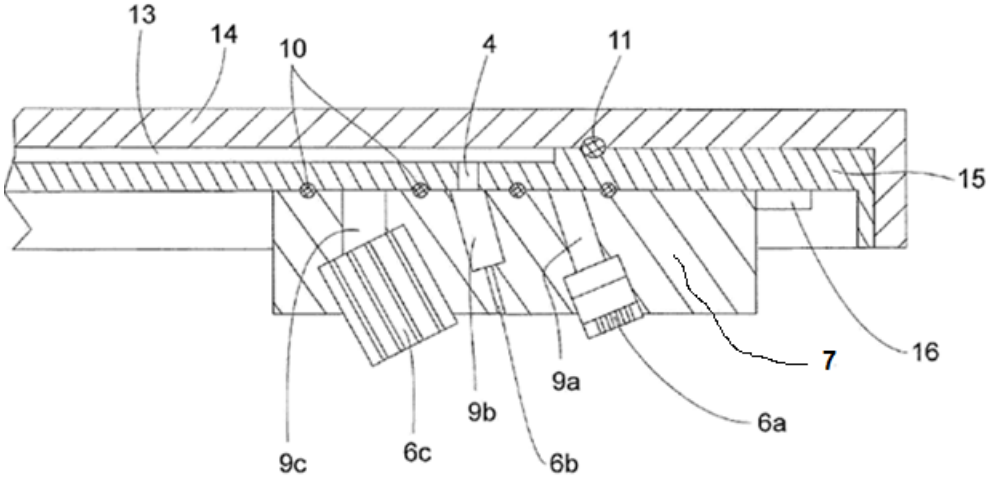
This place covers:

Illustrative example of subject matter classified in this place:

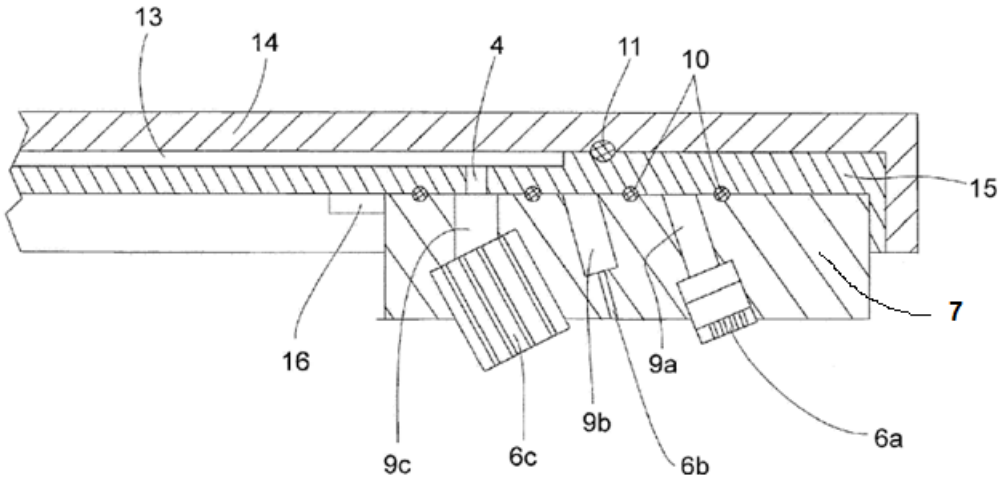
1a.



1b.



1c.



Figures 1a, 1b and 1c illustrate a jet selection plate (7) repositionable to the left or to the right, bringing stationary water outlet (4) into fluid communication with jet chambers in three positions (9a, 9b or 9c) and thus into fluid communication with corresponding outlets of jet-forming bodies (6a, 6b or 6c) of the jet selection plate (7).

References

Limiting references

This place does not cover:

Nozzles with multiple outlet openings having selectively-effective outlets being arranged on a tube or pipe	B05B 1/1672

B05B 1/1672

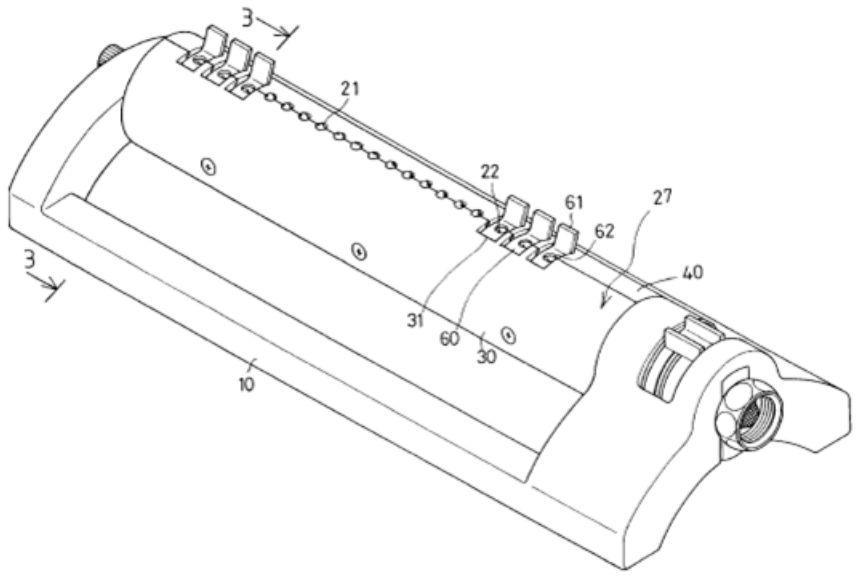
{the selectively-effective outlets being arranged on a tube or pipe}

Definition statement

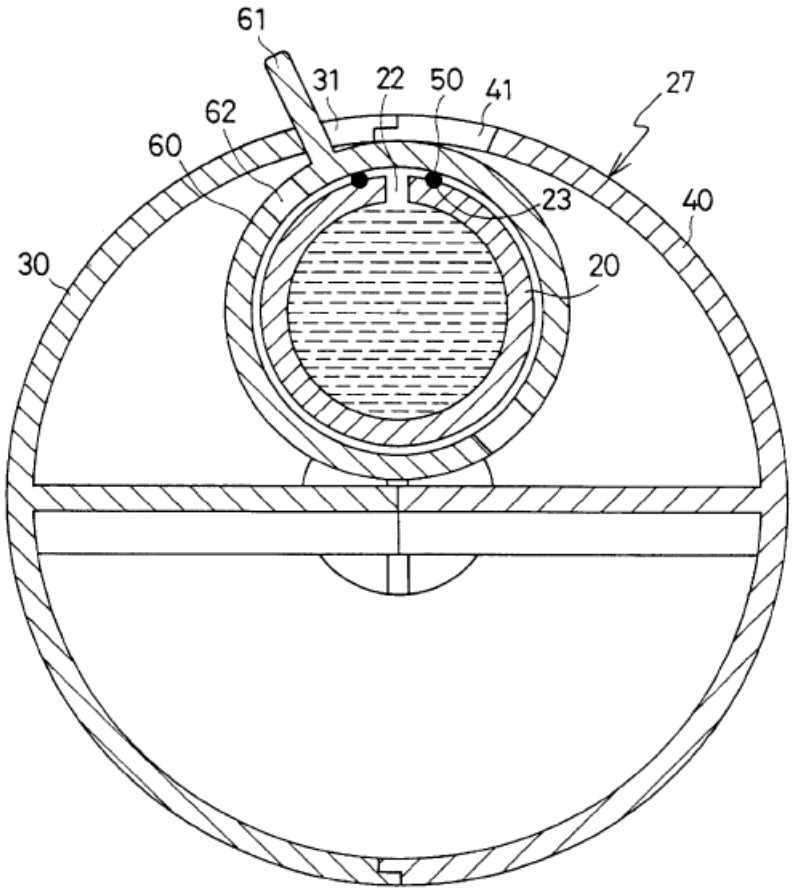
This place covers:

Illustrative example of subject matter classified in this place:

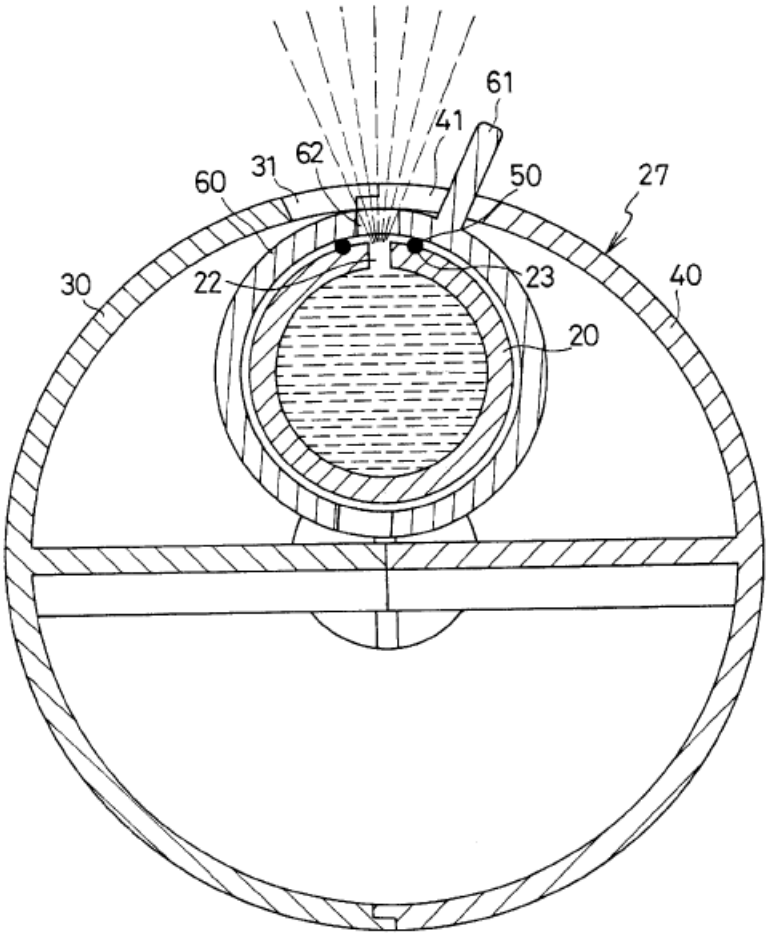
1a.



1b.



1c.



Figures 1a, 1b and 1c illustrate selectively effective outlets (21, 22) being arranged on pipe (20).

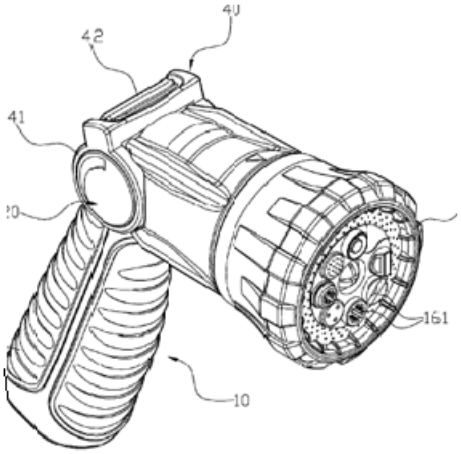
B05B 1/169

{having three or more selectively effective outlets}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a spray head having three or more selectively effective outlets (161).

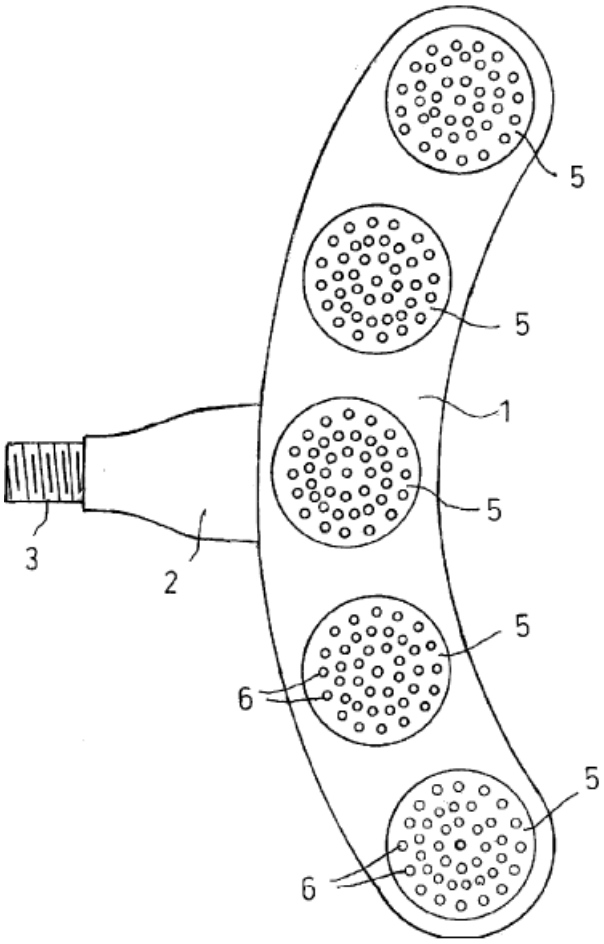
B05B 1/1822

{with all groups or rows being identical}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a shower head having multiple identical groups.

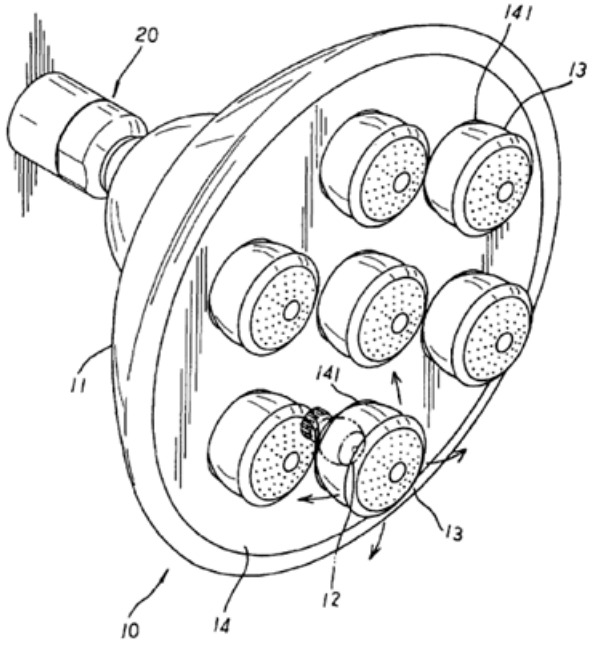
B05B 1/1823

{Concentric or coaxial groups}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a shower head having multiple outlet groups that are concentric.

B05B 1/1824

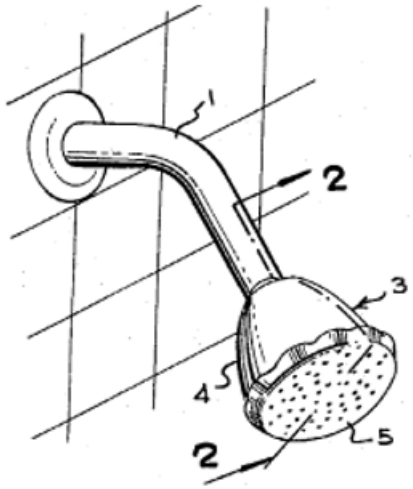
{the outlet openings traversing a concavo-convex outlet wall}

Definition statement

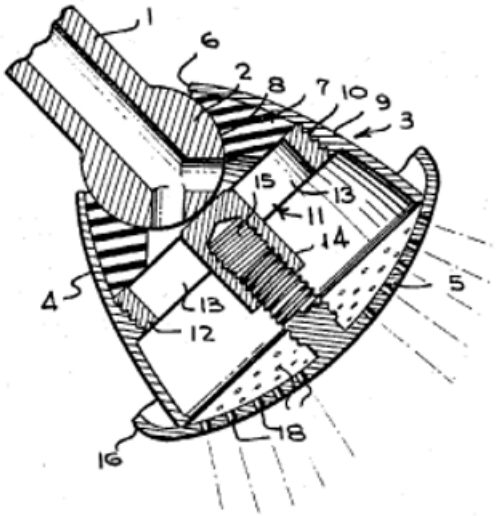
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate a shower head having multiple outlet groups that are concentric and wherein the outlets traverse a concavo-convex outlet wall.

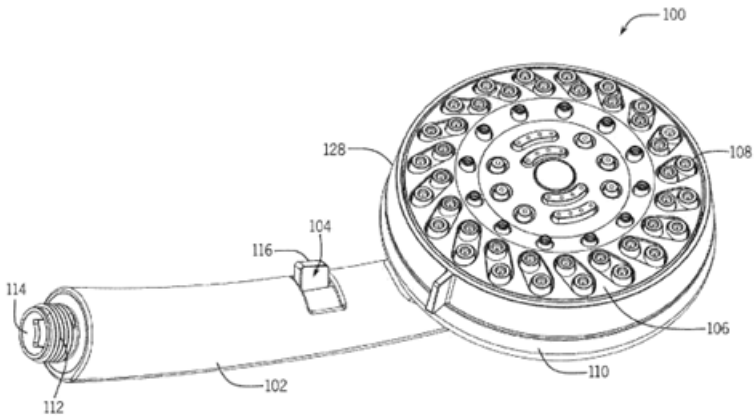
B05B 1/1825

{with three or more dissimilar groups or rows}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a shower head (100) with three or more dissimilar outlet groups.

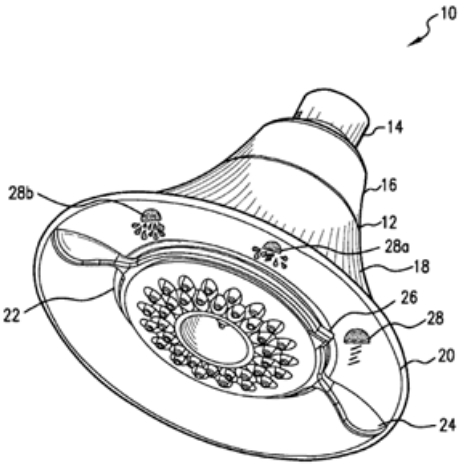
B05B 1/1881

{associated with position or movement indicating means}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a shower head (10) having multiple elements (28, 28a, 28b) that show the corresponding spray pattern when selected by indicator (26).

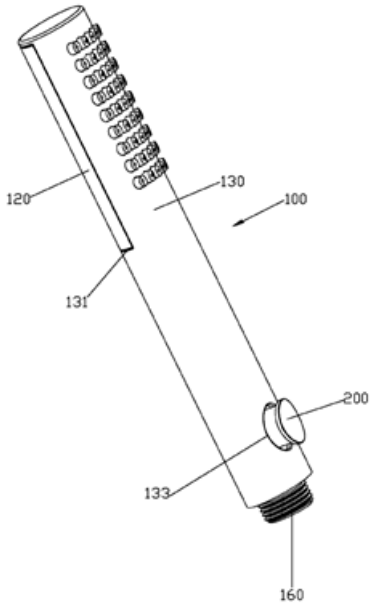
B05B 1/1882

{actuated by a linear movement, e.g. push buttons}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a shower head provided with a push-button (200).

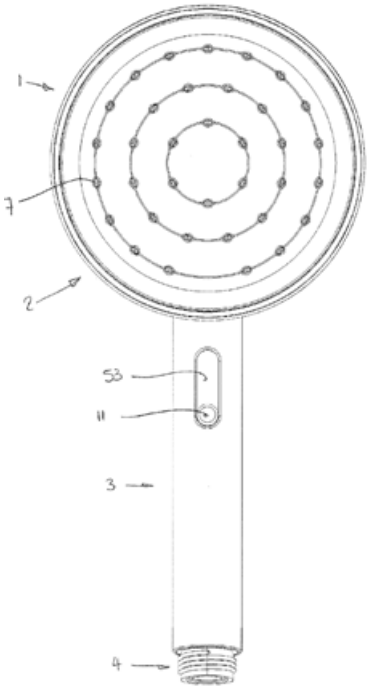
B05B 1/1884

{actuated by a sliding movement along an outer surface of the roses or of the shower heads}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a shower head (1) provided with a linearly slidable actuator (11).

B05B 1/1886

{the linear movement of the controlling member being converted into a rotational movement of the controlled element}

Definition statement

This place covers:

Illustrative examples of subject matter classified in this place:

1a.

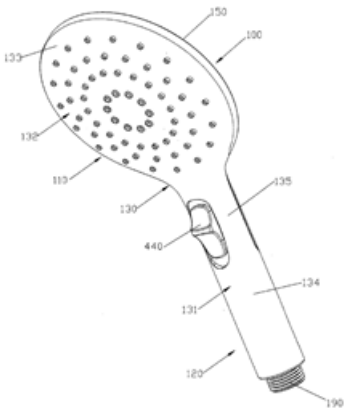


Figure 1a illustrates a shower head having linear actuation converted into rotational movement.

1b.

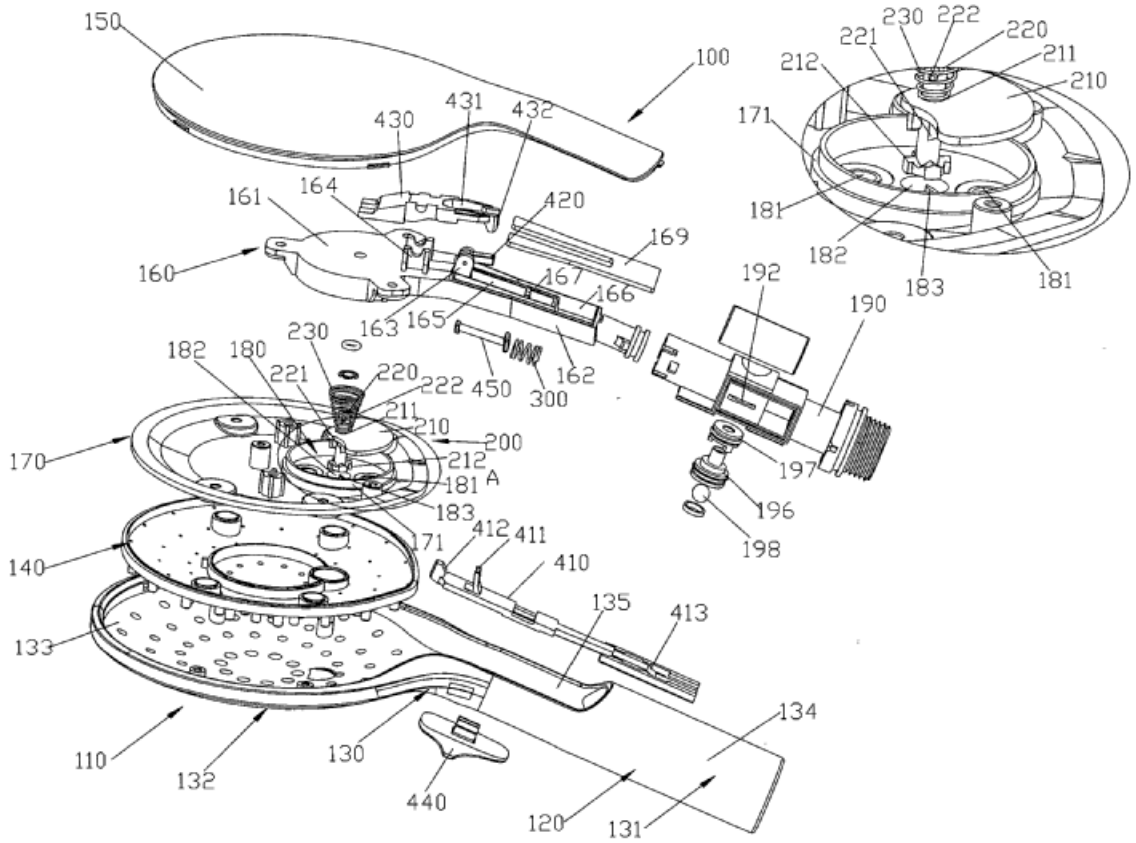


Figure 1b illustrates a shower head provided with a linearly slidable actuator (440) whose actuation rotates element (430).

2.

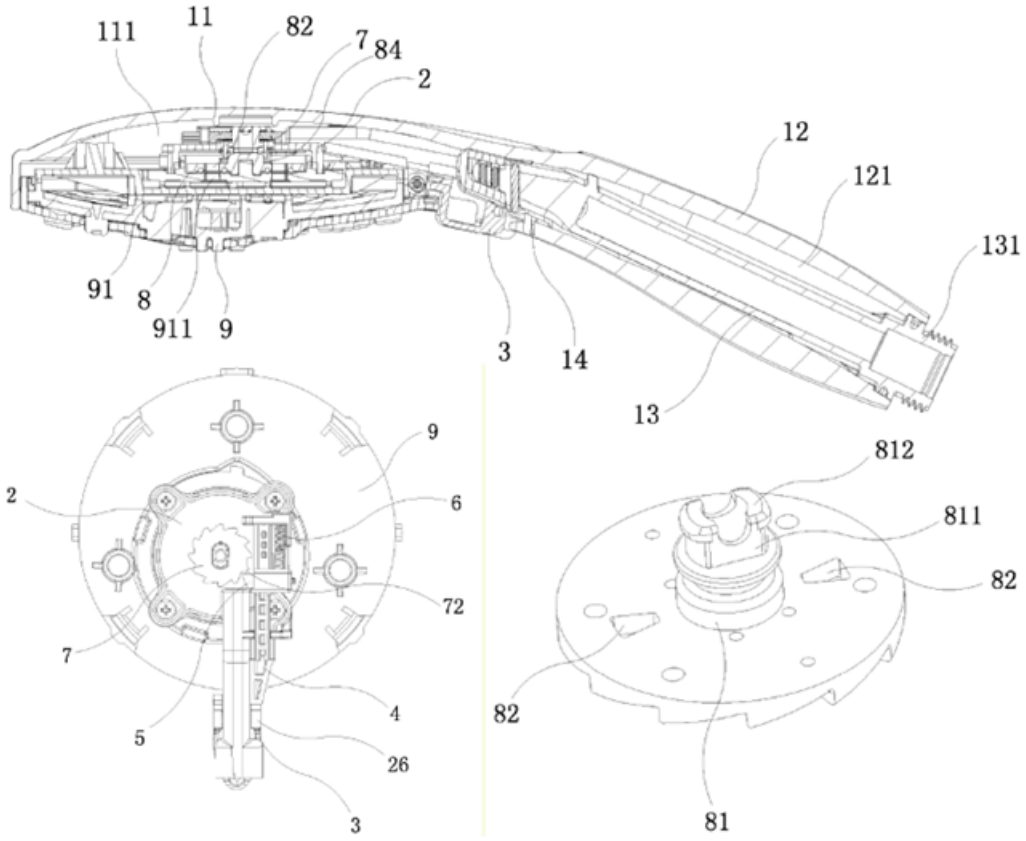


Figure 2 illustrates a shower head provided with a push-button (3) whose actuation rotates a ratchet wheel (7).

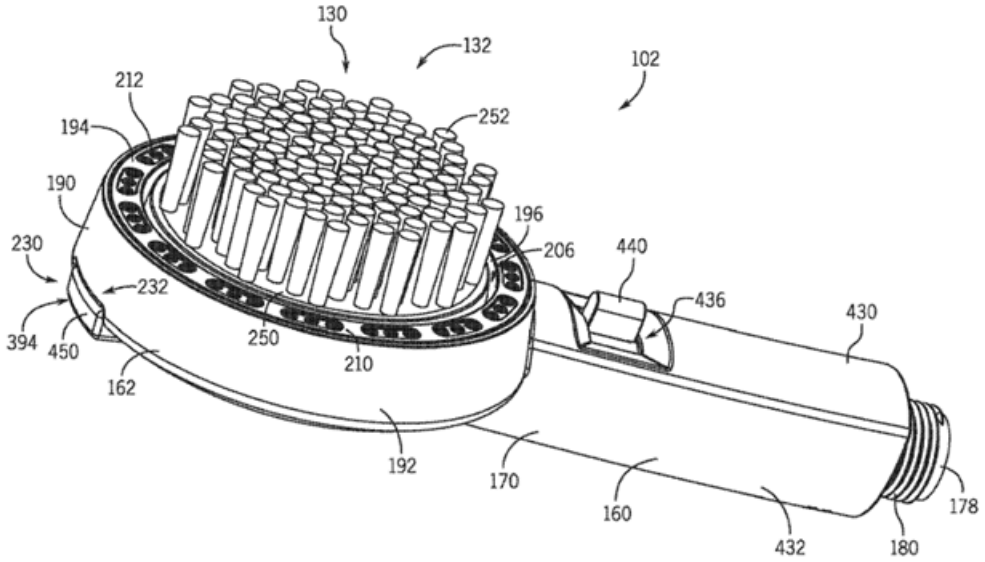
B05B 1/1887

{actuated by a pivoting movement}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a shower head (102) provided with a pivoting lever (440).

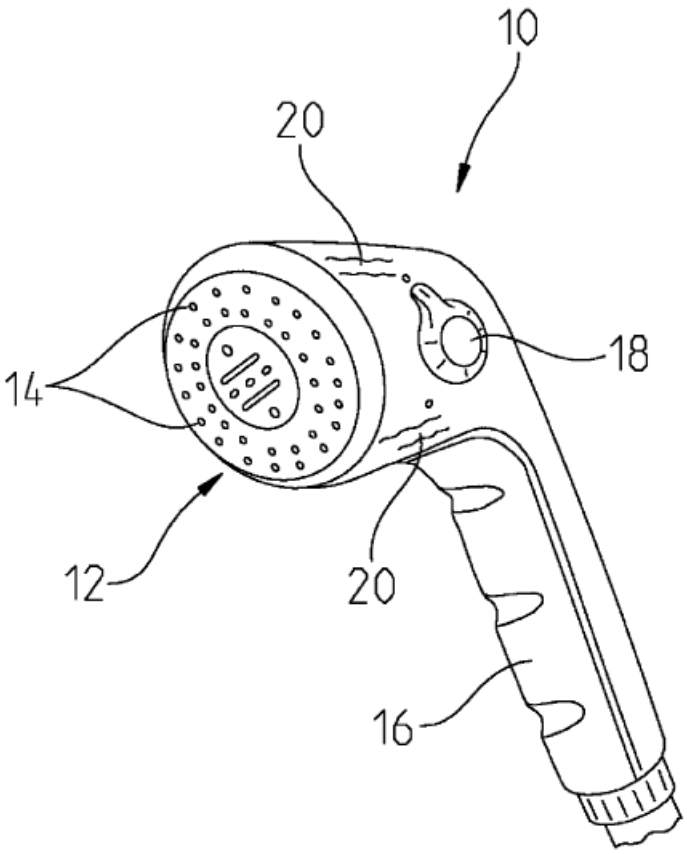
B05B 1/189

{actuated by a rotating movement}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a shower head (10) provided with a rotating controlling element (18).

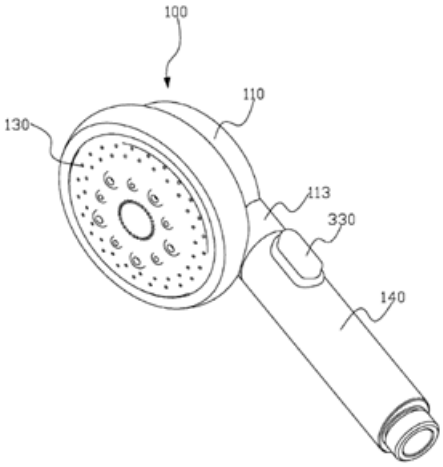
B05B 1/1892

{located in or on the handle}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a shower head (100) provided with a controlling member (330) located on a handle (140).

B05B 1/1894

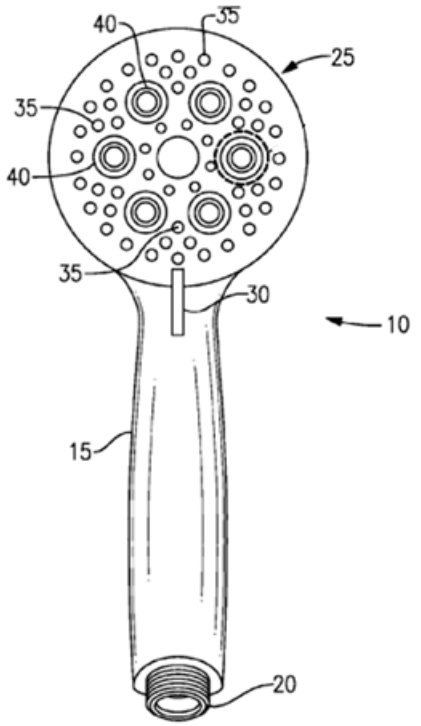
{located in or on the outlet wall}

Definition statement

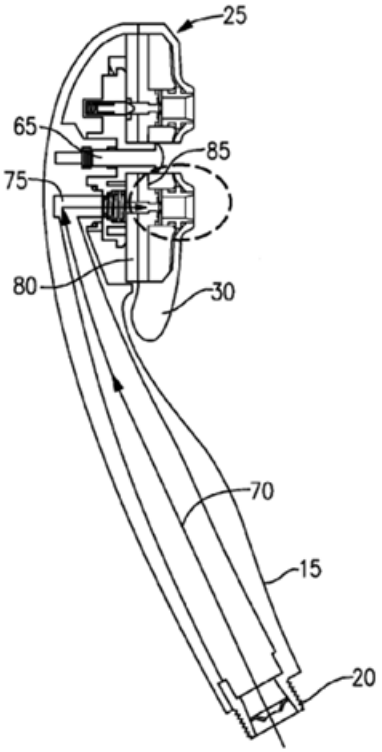
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate a shower head (10) provided with a controlling element (30) located on the outlet wall (25).

B05B 1/1896

{located in or on the housing}

Definition statement

This place covers:

Illustrative examples of subject matter classified in this place:

1.

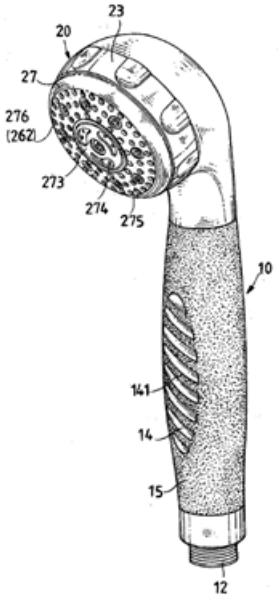


Figure 1 illustrates a shower head (10) provided with a ring controlling element (20) being part of the shower head housing.

2.

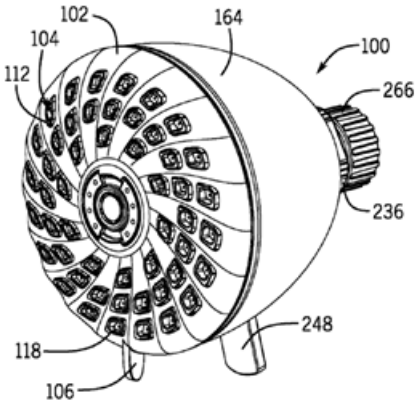


Figure 2 illustrates a shower head (100) provided with a lever controlling element (248) being located on the shower head housing (164).

B05B 1/20

Perforated pipes or troughs, e.g. spray booms; Outlet elements therefor

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Spray booms for agricultural uses	A01M 7/0071
Spray bars for treating roads	E01C 19/176

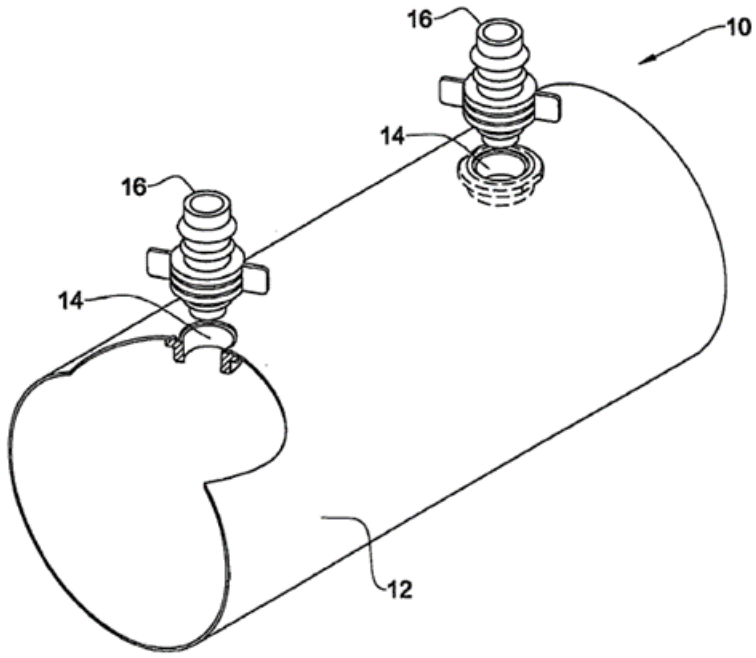
B05B 1/202

{comprising inserted outlet elements}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates outlets (14) comprising inserted elements (16) along an elongated tubular body (12).

B05B 1/207

{the elongated body being a closed loop}

Definition statement

This place covers:

Illustrative examples of subject matter classified in this place:

1.

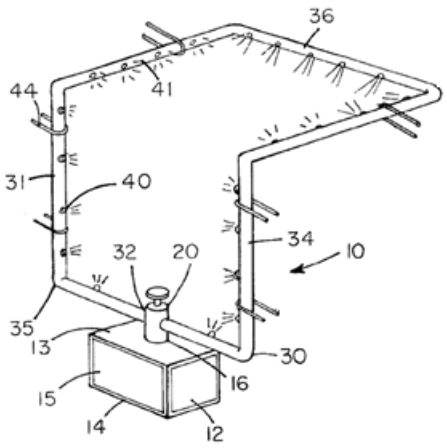


Figure 1 illustrates a first arrangement (10) of several nozzles (40) along a closed loop (31).

2.

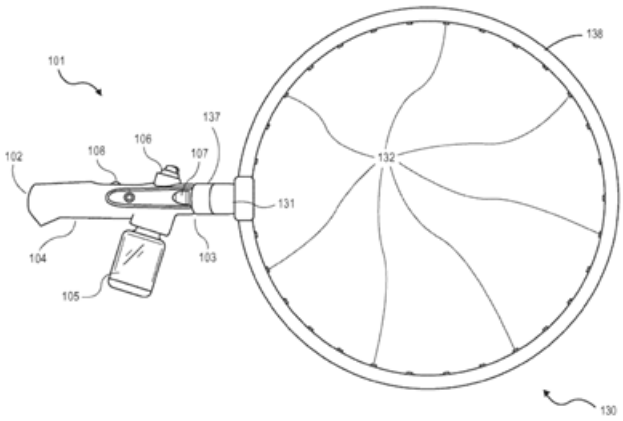


Figure 2 illustrates a second arrangement (130) of several openings (132) along a closed loop (138).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Shower rings	A47K 3/287

B05B 1/22

Spouts (anti-splash devices for water-taps E03C 1/08)

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.

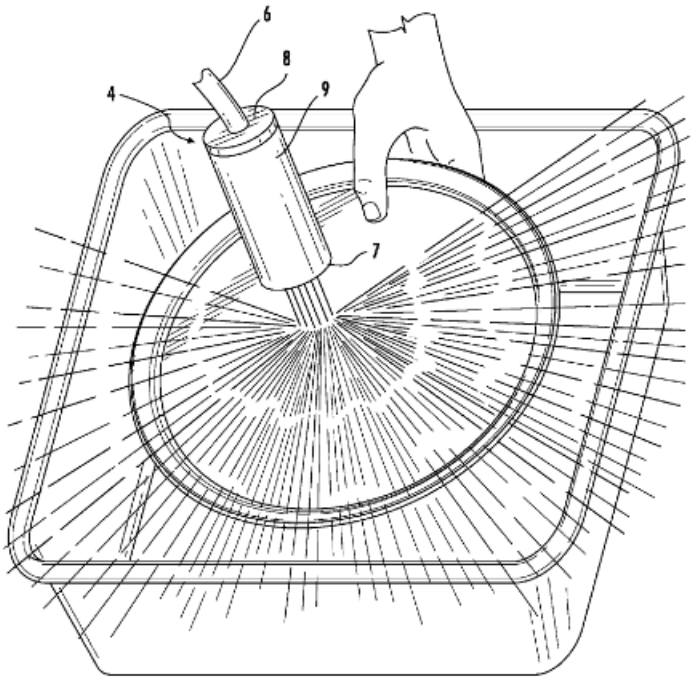
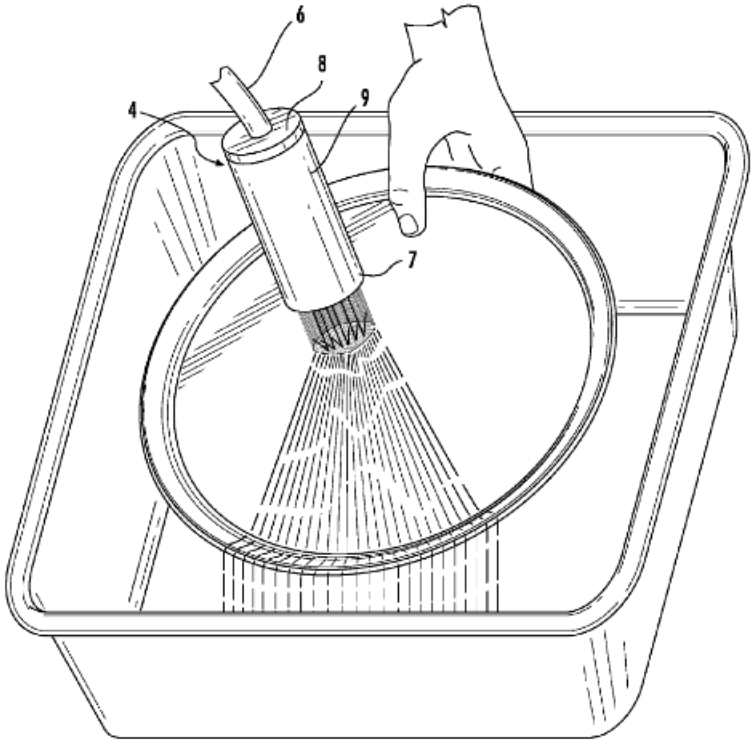
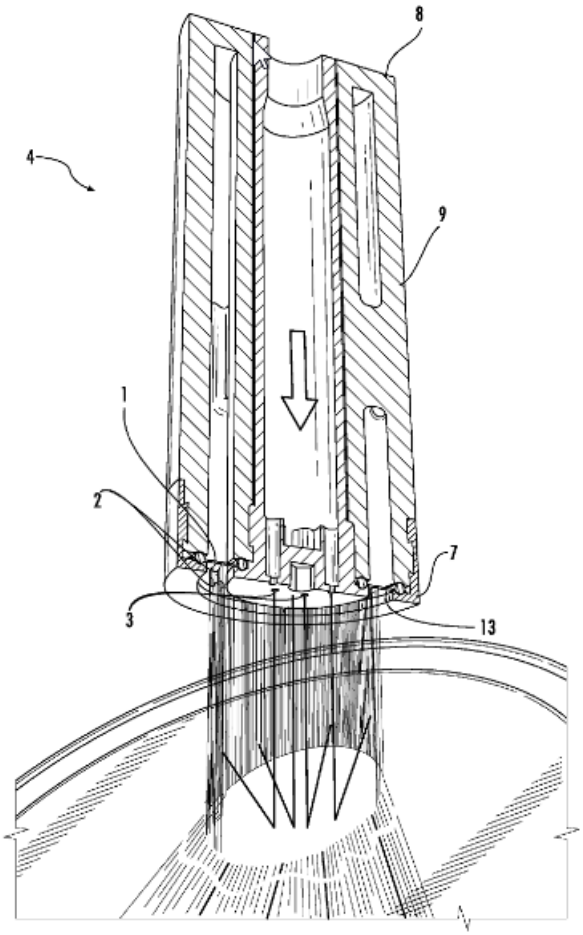


Figure 1a illustrates splashing from a stream of water discharged by a nozzle (7) from a spout (9).

1b.



1c.



Figures 1b and 1c illustrate how an outer stream of water discharged by nozzles (2) prevents unwanted splashing from an inner stream of water discharged by nozzles (3) in a spout (4).

References

Limiting references

This place does not cover:

Anti-splash devices for water-taps	E03C 1/08

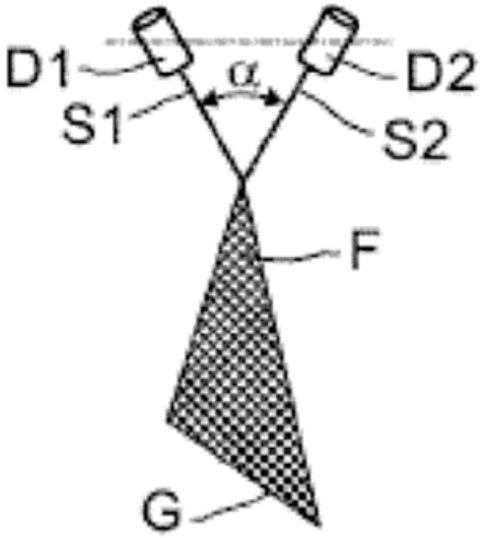
B05B 1/26

with means for mechanically breaking-up or deflecting the jet after discharge, e.g. with fixed deflectors; Breaking-up the discharged liquid or other fluent material by impinging jets

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates two impinging jets (S1) and (S2).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Valves acting as deflectors	B05B 1/3073
Flow controlling element comprising both a lift valve and a deflector	B05B 1/308

B05B 1/262

{with fixed deflectors}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Spraying with rotating elements in association with stationary outlet or deflecting elements	B05B 3/08

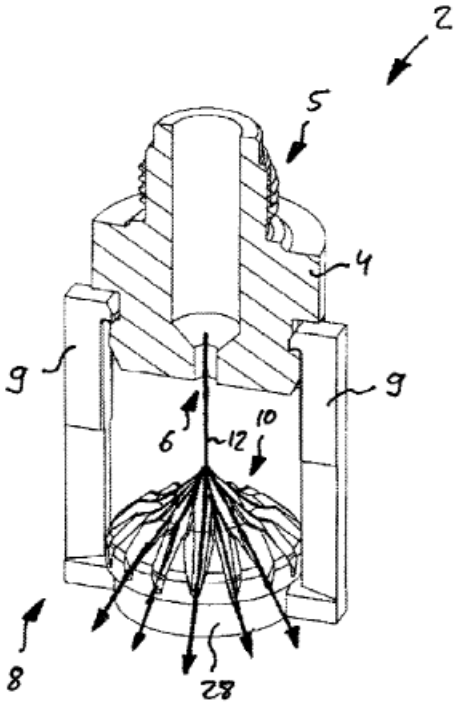
B05B 1/265

{the liquid or other fluent material being symmetrically deflected about the axis of the nozzle}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a fluid (12) being discharged from nozzle (6) and symmetrically deflected over a deflector (10).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Rotary deflector rotated by the liquid discharged	B05B 3/0426

B05B 1/267

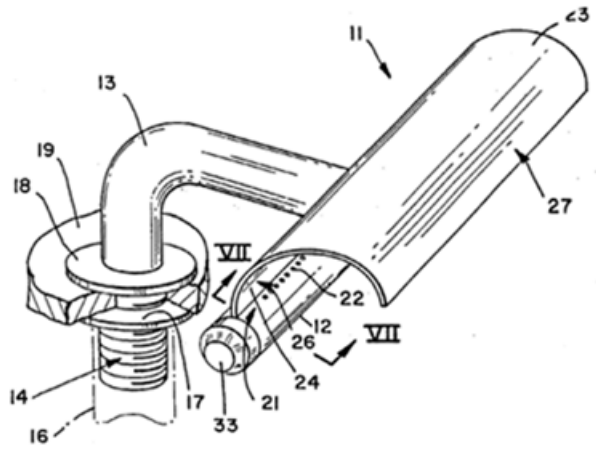
{the liquid or other fluent material being deflected in determined directions}

Definition statement

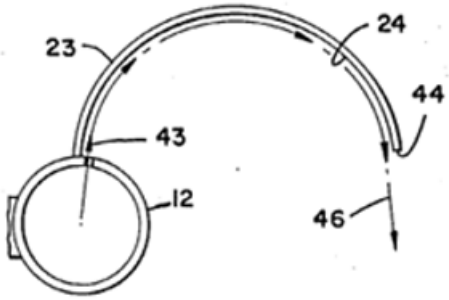
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate a deflector element (11) allowing for deflection in a determined direction (46).

B05B 1/28

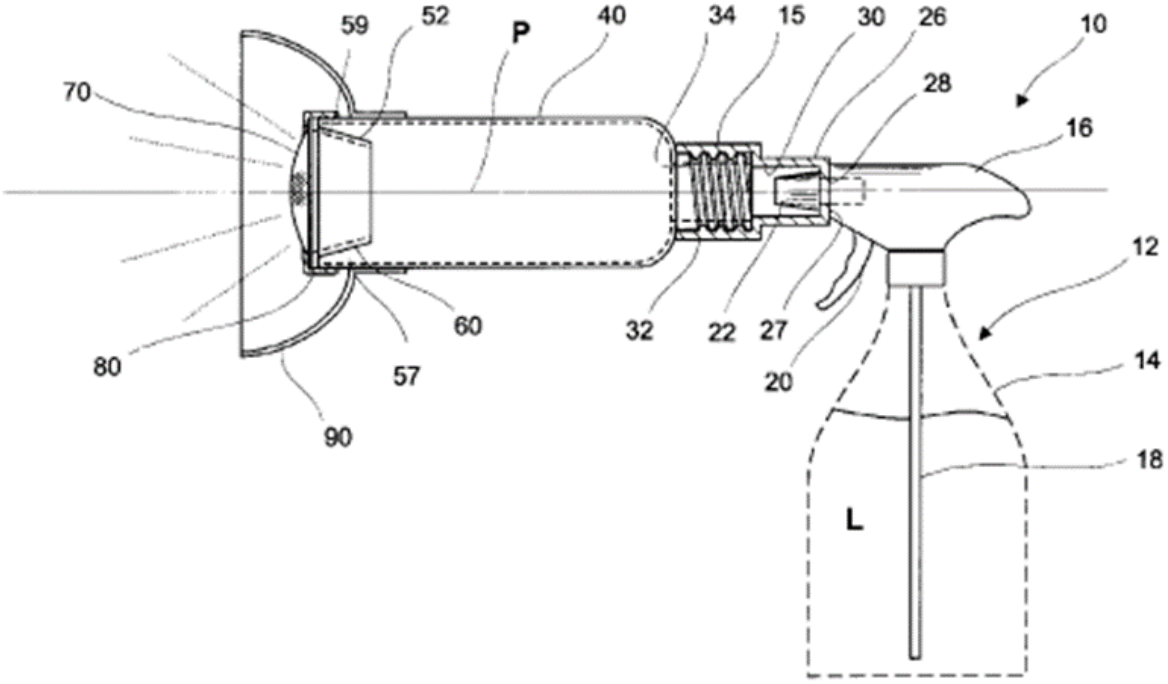
with integral means for shielding the discharged liquid or other fluent material, e.g. to limit area of spray; with integral means for catching drips or collecting surplus liquid or other fluent material

Definition statement

This place covers:

- Nozzles, spray heads or other fluid spraying outlets in combination with shielding elements attached to or integrally formed with the outlet elements, which block or shield a portion of the fluid discharged from the outlet elements, e.g. in order to limit the area of fluid spray.
- Nozzles, spray heads or other fluid spraying outlets in combination with integrally formed means for catching drips or collecting surplus liquid or other fluent material, e.g. in order to collect undesired surplus fluid.

Illustrative example of subject matter classified in this place:



The Figure illustrates a spray shield (90) to limit the area of spray.

References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Arrangements for controlling the spray area	B05B 12/16
Shielding elements for controlling the spray area	B05B 12/32
Arrangements for collecting, re-using or eliminating excess spraying material	B05B 14/00

B05B 1/30

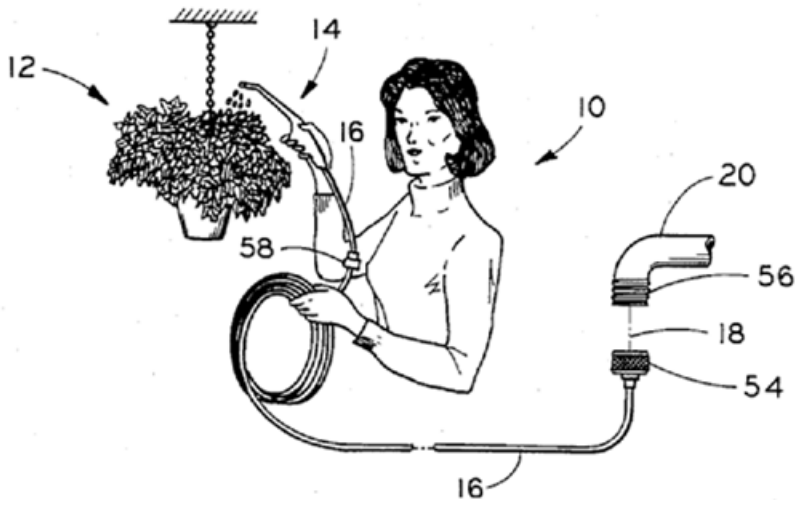
designed to control volume of flow, e.g. with adjustable passages {(B05B 11/0094 takes precedence)}

Definition statement

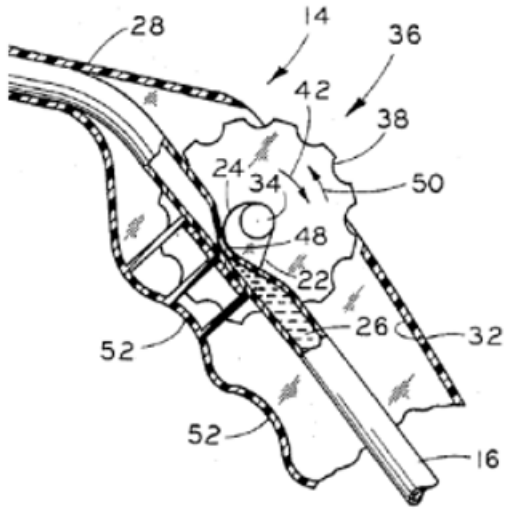
This place covers:

Illustrative example of subject matter classified in this place:

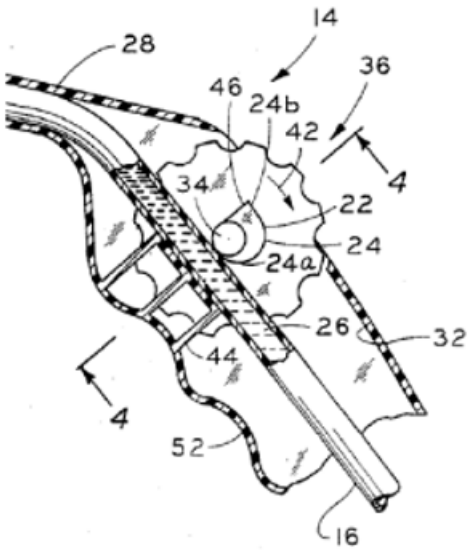
1a.


12
14
16
10
20
58
56
18
54
16

1b.


28
14
36
42
38
24
34
50
48
22
26
32
52
52
16

1c.


14
28
36
46
24b
42
4
34
22
24
24a
26
32
44
4
52
16

Figures 1a, 1b and 1c illustrate fluid control by pinching of supply tube (16) for watering a plant (12).

References

Limiting references

This place does not cover:

Single-unit, hand-held apparatus comprising a container and a discharge nozzle attached thereto, in which flow of liquid or other fluent material is produced by the muscular energy of the operator at the moment of use or by an equivalent manipulator independent from the apparatus components or details including movable dispensing tubes, e.g. articulated on the sprayer	B05B 11/0094

Informative references

Attention is drawn to the following places, which may be of interest for search:

Control of flow in apparatuses discharging fluid from an orifice in contact with the surface of a work to be coated	B05C 5/0225
Control of flow in installations for distributing water	E03B 7/075
Valves; Taps; Cocks; Actuating-floats; Devices for venting or aerating	F16K
Control of flow in general	G05D 7/00

B05B 1/3006

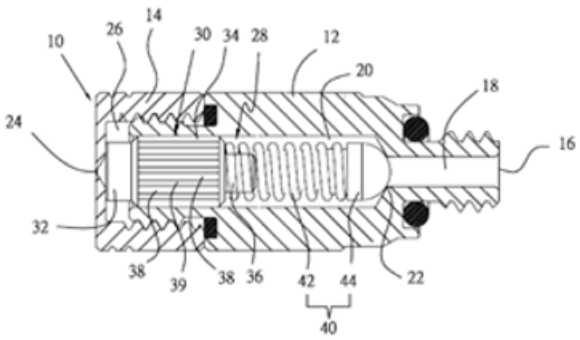
{the controlling element being actuated by the pressure of the fluid to be sprayed (B05B 1/323 takes precedence; single-unit outlet valves actuated by the pressure of the fluid to be sprayed B05B 11/0062)}

Definition statement

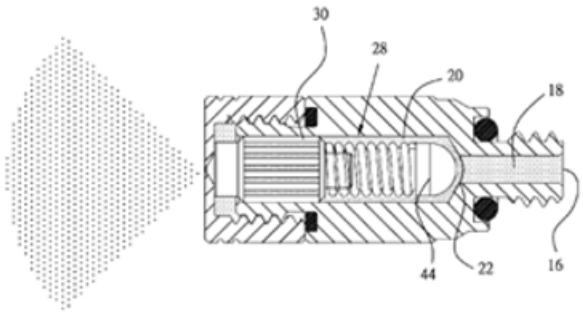
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate a nozzle (10) with an internal valve in the first image that is actuated to open when fluid is applied to the sprayer, as shown in the second image.

References

Limiting references

This place does not cover:

Nozzles, spray heads or other outlets designed to control volume of flow, in which a valve member forms part of the outlet opening and in which the valve member is actuated by the pressure of the fluid to be sprayed	B05B 1/323
Single-unit, hand-held apparatus comprising a container and a discharge nozzle attached thereto, in which flow of liquid or other fluent material is produced by the muscular energy of the operator at the moment of use or by an equivalent manipulator independent from the apparatus, components or details including outlet valves actuated by the pressure of the fluid to be sprayed	B05B 11/0062

Informative references

Attention is drawn to the following places, which may be of interest for search:

Flow or pressure regulators	B05B 12/087
Diaphragms actuated by fluid pressure in valves in general	F16K 7/17
Deformable sensing element acting as a valve for controlling flow in general	G05D 7/012

B05B 1/3013

{Lift valves (B05B 1/3033 takes precedence)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.

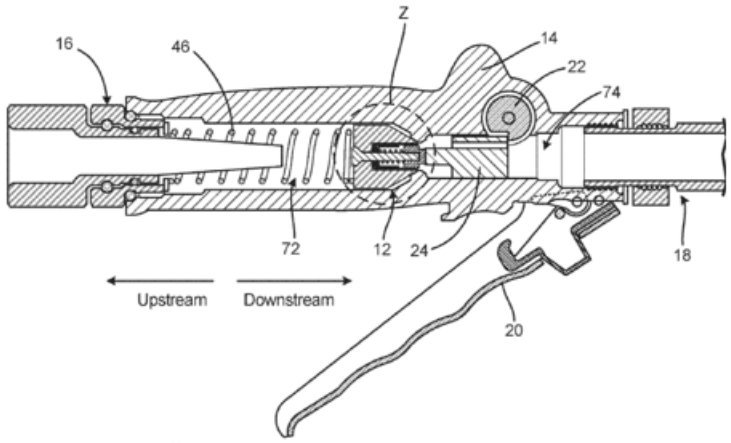


Figure 1a illustrates a lift valve (12) indicating upstream flow to the left and downstream flow to the right.

1b.

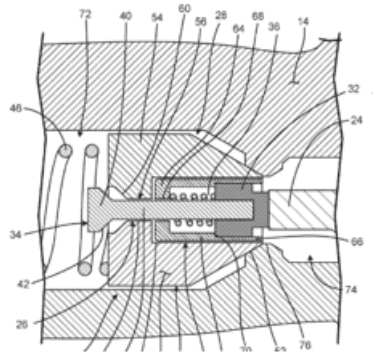


Figure 1b illustrates the valve (12) closed as achieved by the lever (20) in Figure 1a.

1c.

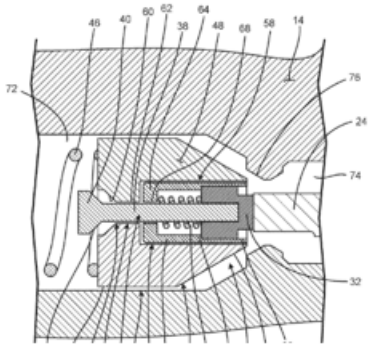


Figure 1c illustrates the valve (12) open in position, as achieved by the lever (20) in Figure 1a.

References

Limiting references

This place does not cover:

Nozzles, spray heads or other outlets designed to control volume of flow, the control being effected by relative coaxial longitudinal movement of the controlling element and the spray head	B05B 1/3033

Informative references

Attention is drawn to the following places, which may be of interest for search:

Nozzles, spray heads or other outlets designed to control volume of flow, the controlling element being actuated by the pressure of the fluid to be sprayed	B05B 1/3006
Lift valves in general	F16K 1/00

B05B 1/302

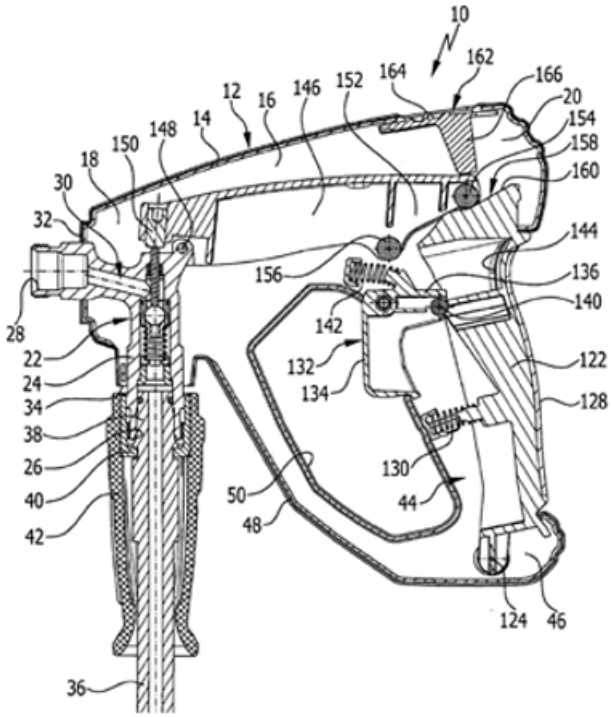
{with a ball shaped valve member}

Definition statement

This place covers:

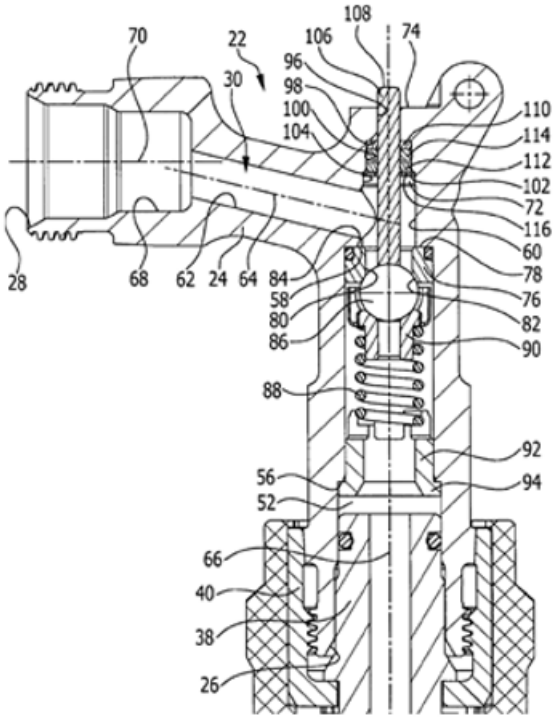
Illustrative example of subject matter classified in this place:

1a.



Illustrative example of subject matter classified in this place:

1b.



Figures 1a and 1b illustrate a lift valve (22), which includes a ball shaped valve member (86) depicted in Figure 1b.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Ball-shaped valve members in general	B05B 1/3006

B05B 1/3026

{Gate valves; Sliding valves; Cocks (B05B 1/326 takes precedence)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.

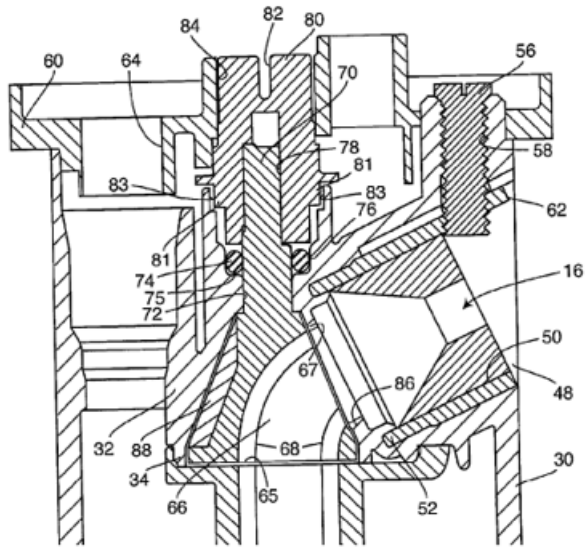


Figure 1a illustrates a cock in an open position (80), which acts as the controlling element to control the flow of fluid upward to an outlet (16).

1b.

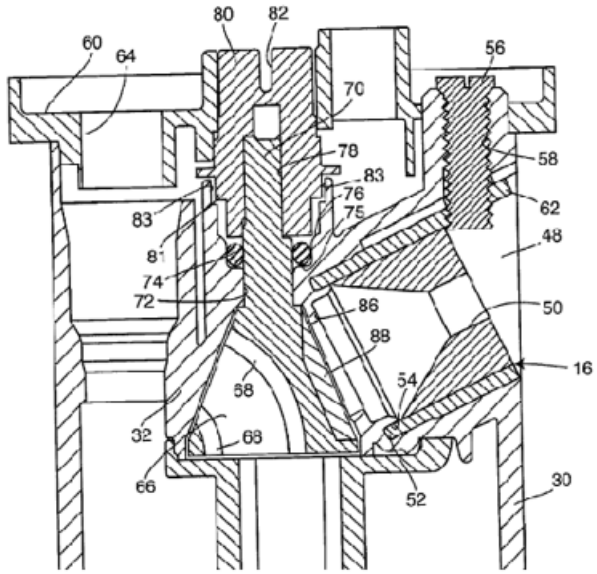


Figure 1b illustrates the cock (80) in a closed position.

References

Limiting references

This place does not cover:

Nozzles, spray heads or other outlets designed to control volume of flow, in which a valve member forms part of the outlet opening and in which the valve is a gate valve, a sliding valve or a cock	B05B 1/326

Informative references

Attention is drawn to the following places, which may be of interest for search:

Nozzles, spray heads or other outlets designed to control volume of flow, the controlling element being actuated by the pressure of the fluid to be sprayed	B05B 1/3006
Gate or sliding valves in general	F16K 3/00
Cocks in general	F16K 5/00

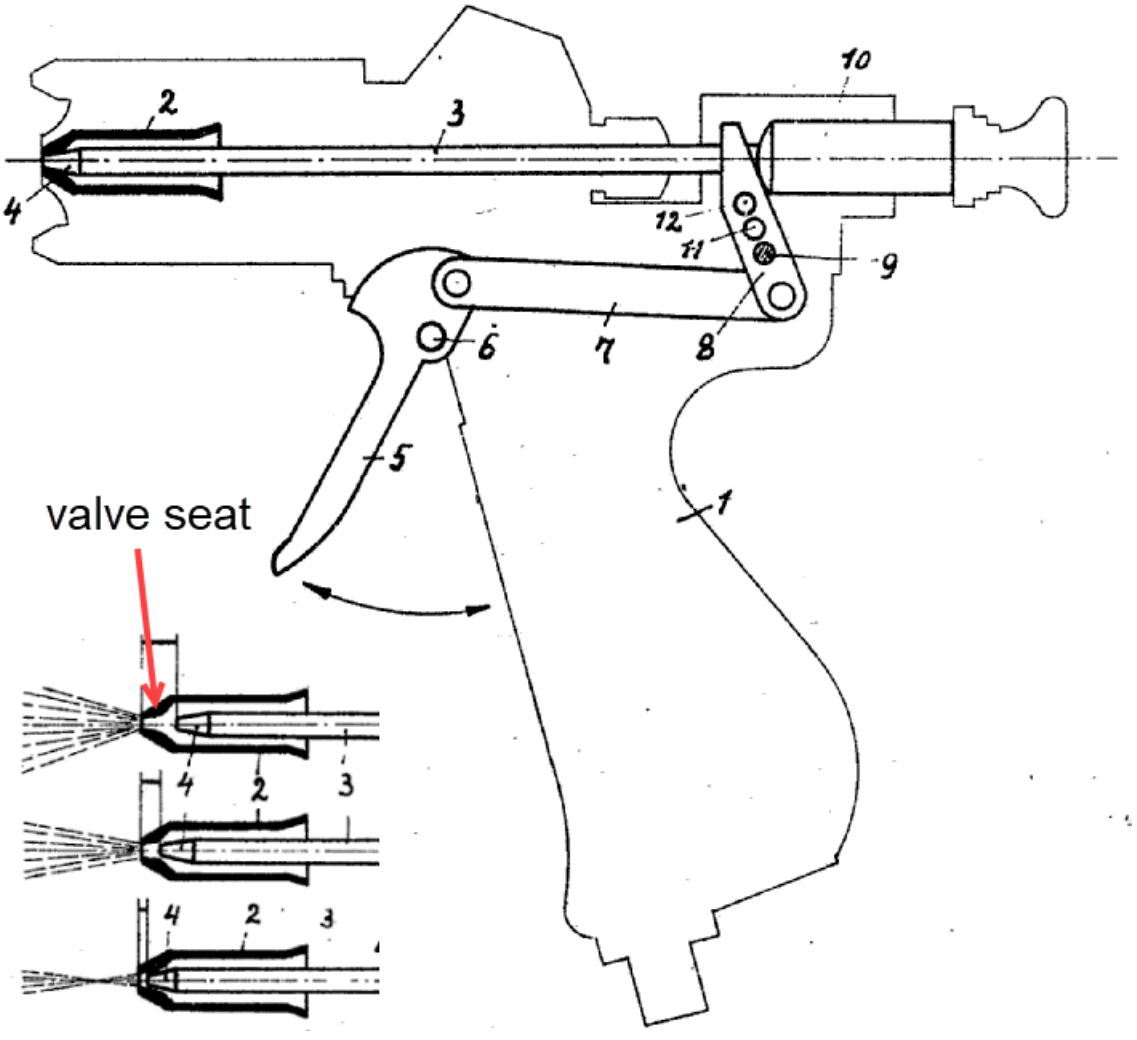
B05B 1/3046

{the valve element, e.g. a needle, co-operating with a valve seat located downstream of the valve element and its actuating means, generally in the proximity of the outlet orifice (B05B 1/308 takes precedence)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a spray gun with a "valve seat" located downstream of a movable valve element (4).

References

Limiting references

This place does not cover:

Nozzles, spray heads or other outlets designed to control volume of flow, in which the control is effected by relative coaxial longitudinal movement of the controlling element and the spray head, and in which the controlling element comprises both a lift valve and a deflector	B05B 1/308

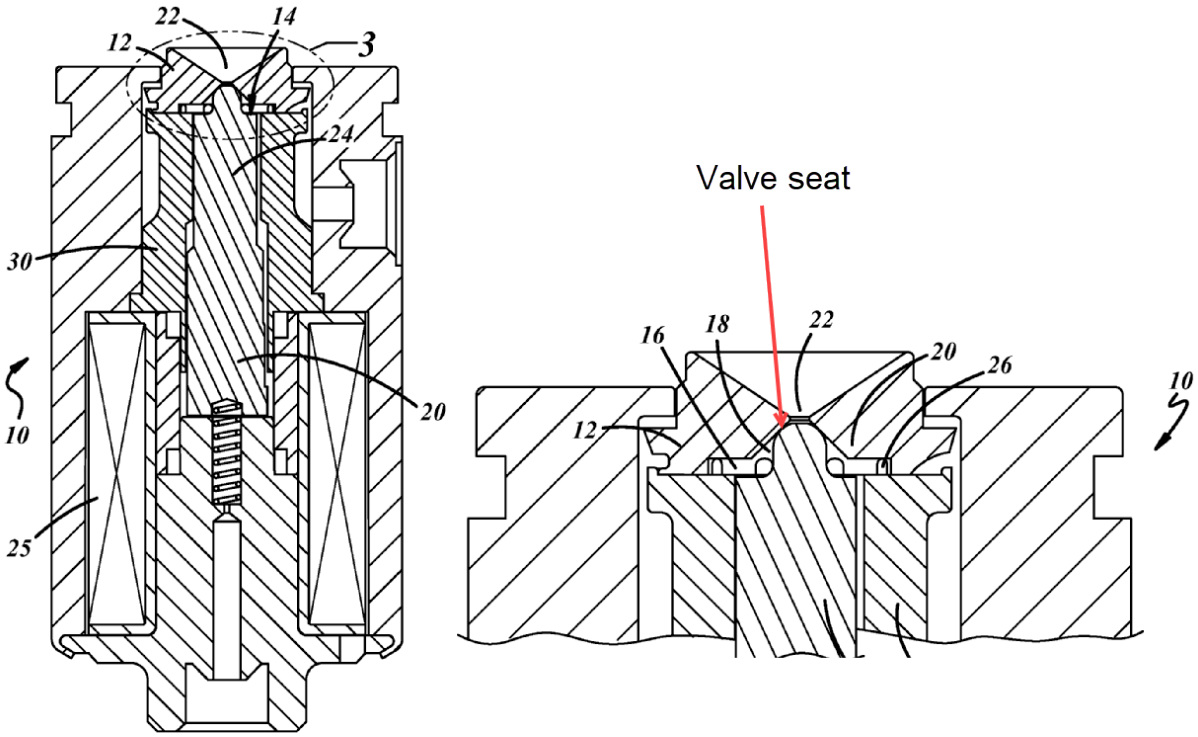
B05B 1/3053

{the actuating means being a solenoid}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a solenoid (25) that controls the movement of a lift valve element (20) for controlling the volume of flow through the outlet towards (22), wherein the valve seat is located downstream of a movable lift valve element (20).

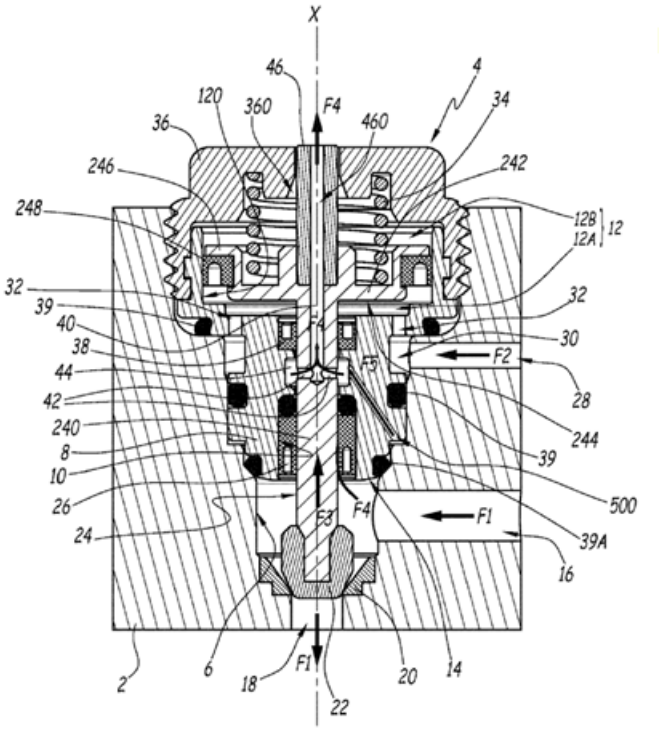
B05B 1/306

{the actuating means being a fluid}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates an intake duct (28) for a pressurized control fluid flow (F2), e.g. compressed air, which controls the movement of lift valve element (240) for controlling the volume of flow (F1) through outlet (18), wherein a valve seat (20) is located downstream of a movable valve element (240).

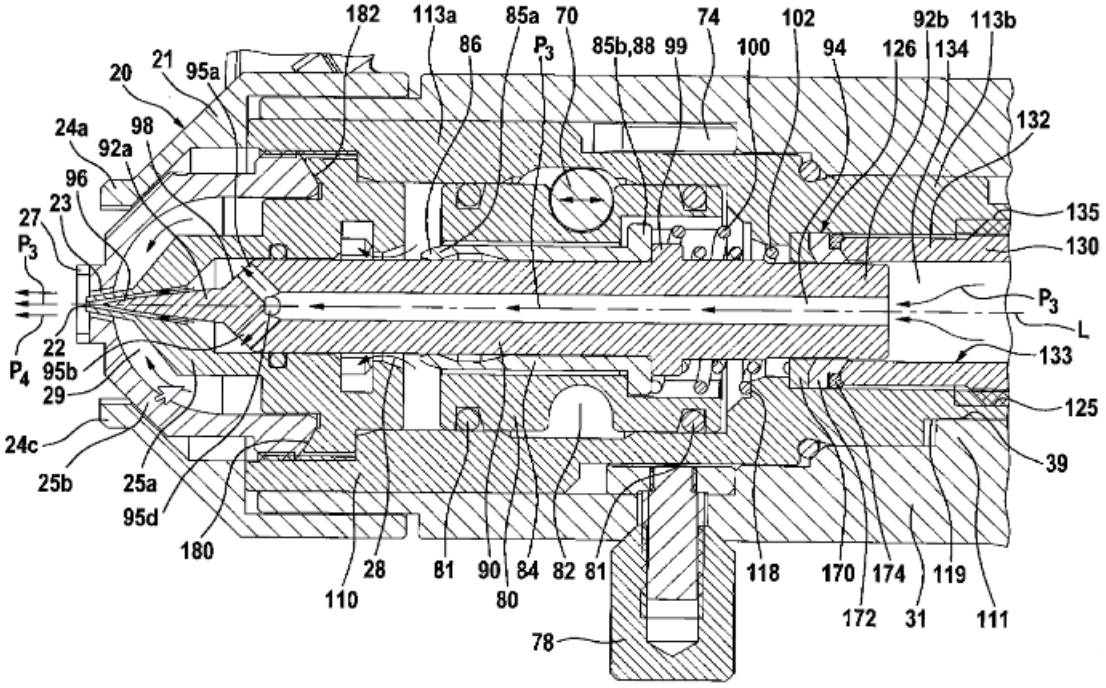
B05B 1/3066

{the valve element being at least partially hollow and liquid passing through it when the valve is opened}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a spray device with a valve seat (22) located downstream of movable valve element (90), wherein needle (90) comprises an internal channel (94).

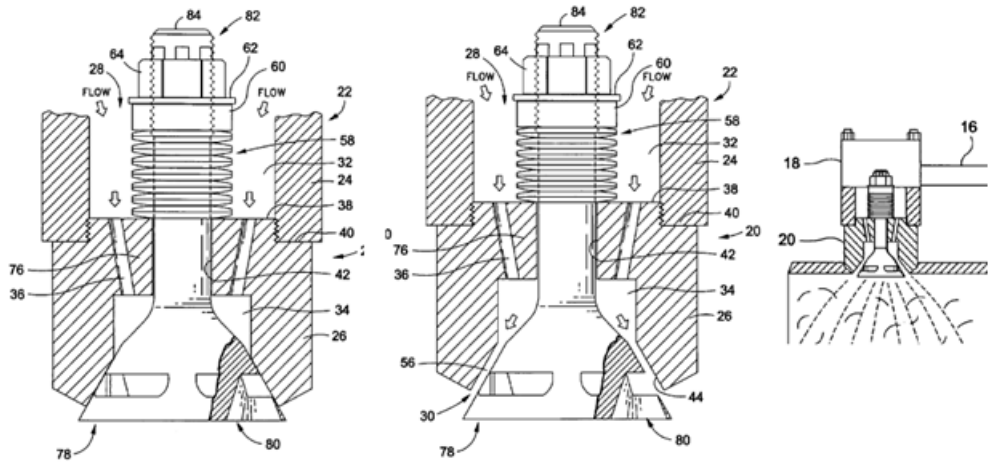
B05B 1/3073

{the controlling element being a deflector acting as a valve in co-operation with the outlet orifice}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a deflector on a valve body (80), which acts as both a valve and a deflector.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Nozzles, spray heads or other outlets designed to control volume of flow with fixed deflectors	B05B 1/262
Nozzles, spray heads or other outlets designed to control volume of flow, in which the control is effected by relative coaxial longitudinal movement of the controlling element and the spray head, and in which the controlling element comprises both a lift valve and a deflector	B05B 1/308

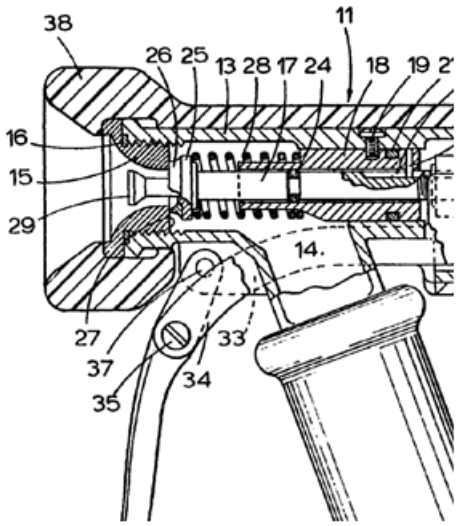
B05B 1/308

{the controlling element comprising both a lift valve and a deflector separated from the lift valve}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a movable controlling element (18) comprising a lift valve (26) and a deflector (29) separated from the lift valve (26), wherein the deflector (29) itself does not act as a valve.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Controlling elements comprising a deflector acting as a valve in co-operation with the outlet orifice	B05B 1/3073

B05B 1/3086

{the controlling element being a grooved body, which is movable in the outlet orifice}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.

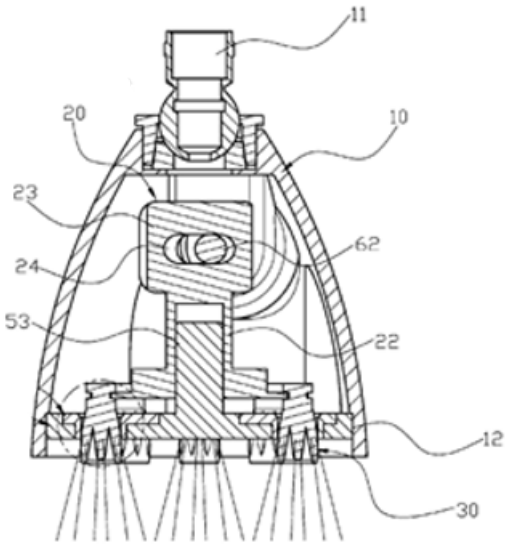


Figure 1a illustrates three or more valve bodies (30).

1b.

Figure 1b illustrates a valve body (30) which is provided with grooves (33).

1c.

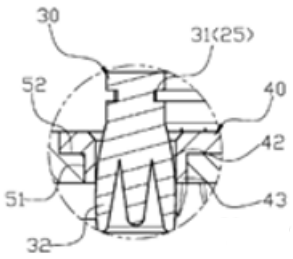


Figure 1c illustrates the movement of each valve body (30) within a corresponding outlet orifice (42) that controls the amount of water flowing out of the outlet orifice (42).

B05B 1/32

in which a valve member forms part of the outlet opening {(B05B 1/3033 takes precedence)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.

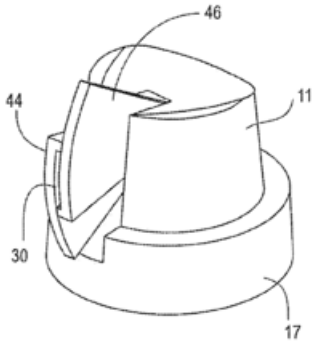


Figure 1a illustrates that the movement of one or both vanes (44, 46) reduce the slotted outlet dimension of outlet opening (30).

1b.

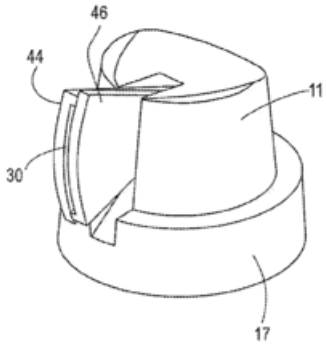


Figure 1b illustrates that the movement of one or both vanes (44, 46) enlarge the slotted outlet dimension of outlet opening (30).

References

Limiting references

This place does not cover:

Nozzles, spray heads or other outlets designed to control volume of flow, the control being effected by relative coaxial longitudinal movement of the controlling element and the spray head	B05B 1/3033

B05B 1/323

{the valve member being actuated by the pressure of the fluid to be sprayed (single unit outlet valves actuated by the pressure of the fluid to be sprayed B05B 11/0062)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.

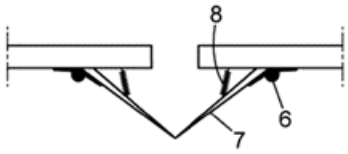


Figure 1a illustrates the closed position of an outlet opening (7) lacking fluid pressure.

1b.

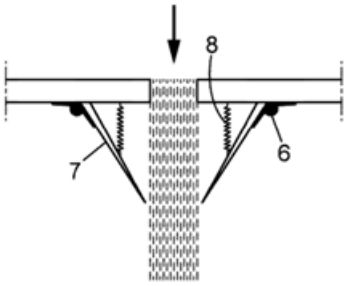


Figure 1b illustrates an outlet opening (7) actuated by the pressure of the fluid to be sprayed through the opening (7) with the fluid flowing downward though the opening (7), as indicated by the arrow.

References

Limiting references

This place does not cover:

Single-unit outlet valves actuated by the pressure of the fluid to be sprayed	B05B 11/0062

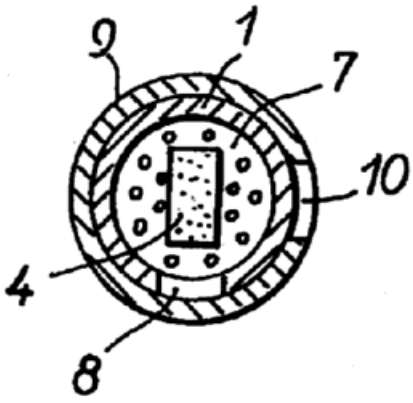
B05B 1/326

{Gate valves; Sliding valves; Cocks}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a rotatable outer sleeve (9) closing hole (8), in which the outer sleeve (9) has a first hole (10) that can be located in alignment with a second hole (8) in an inner member (1) by turning the rotatable outer sleeve (9) suitably.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Gate or sliding valves in general	F16K 3/00
Cocks in general	F16K 5/00

B05B 1/3402

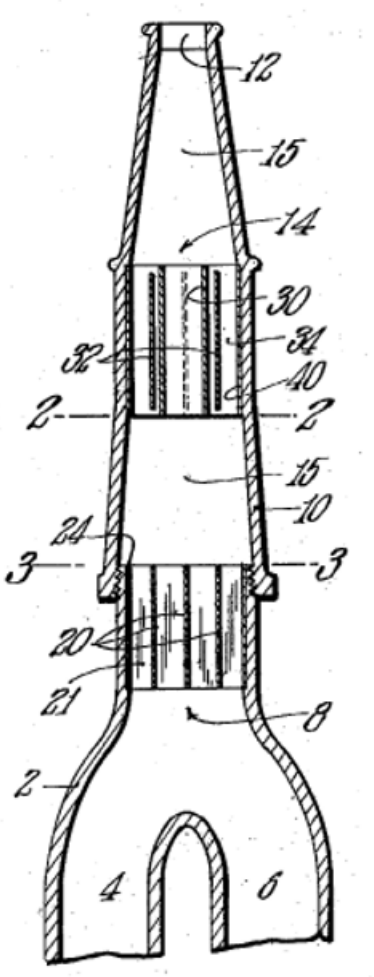
{to avoid or reduce turbulence, e.g. with fluid flow straightening means}

Definition statement

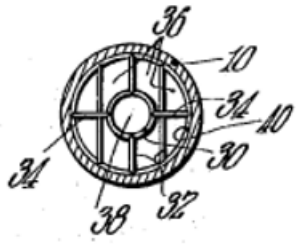
This place covers:

Illustrative example of subject matter classified in this place:

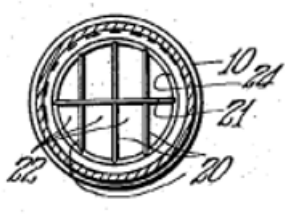
1a.



1b.



1c.



Figures 1a, 1b and 1c illustrate fins (20, 30) acting as flow straightening means to reduce turbulence.

B05B 1/3405

{to produce swirl}

References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Fuel-injectors provided with means to impart a whirling motion to fuel for combustion engines	F02M 61/162
Burners using a direct spraying action obtained by centrifugal action	F23D 11/04
Burner nozzles provided with swirl means	F23D 11/383

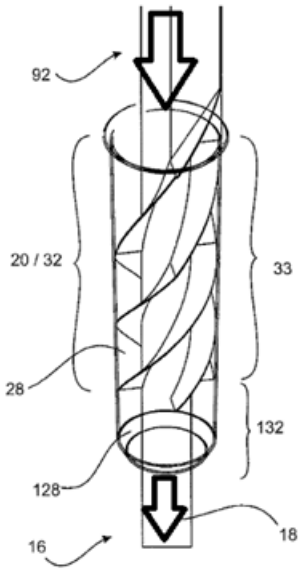
B05B 1/3415

{with swirl imparting inserts upstream of the swirl chamber}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates an insert inside of a tube (28) that imparts swirl upstream of a swirl chamber.

B05B 1/3426

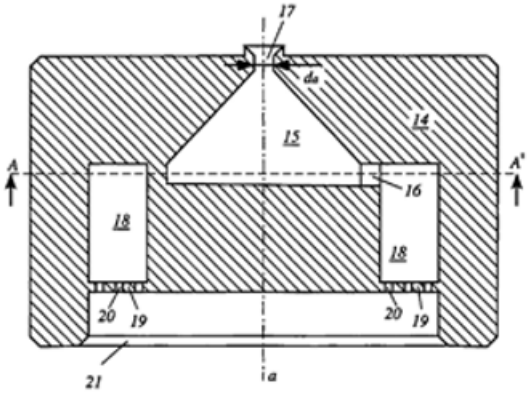
{the channels emerging in the swirl chamber perpendicularly to the outlet axis (B05B 1/3436 takes precedence)}

Definition statement

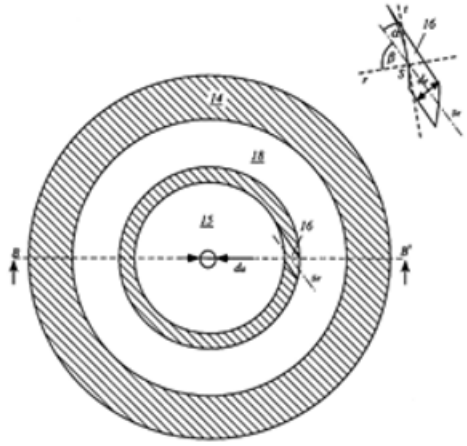
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate channels (16) emerging in a swirl chamber (15) perpendicularly to an axis "a" in Figure 1b.

References

Limiting references

This place does not cover:

Channels that are formed at the interface of cooperating elements and the interface is a plane perpendicular to the outlet axis	B05B 1/3436

B05B 1/3436

{the interface being a plane perpendicular to the outlet axis}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.

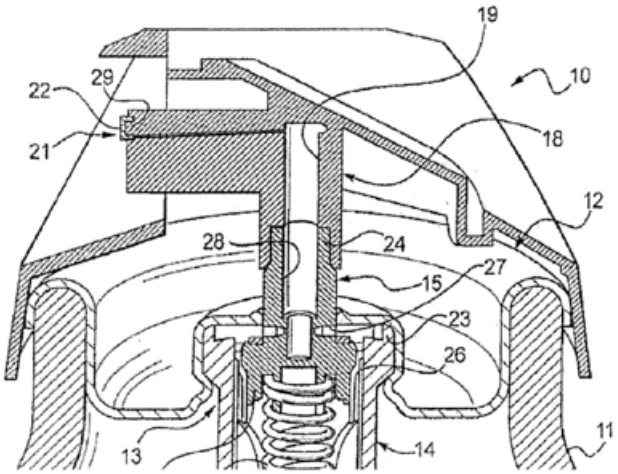


Figure 1a illustrates channels formed at the planar interface between end wall (29) and insert (21).

1b.

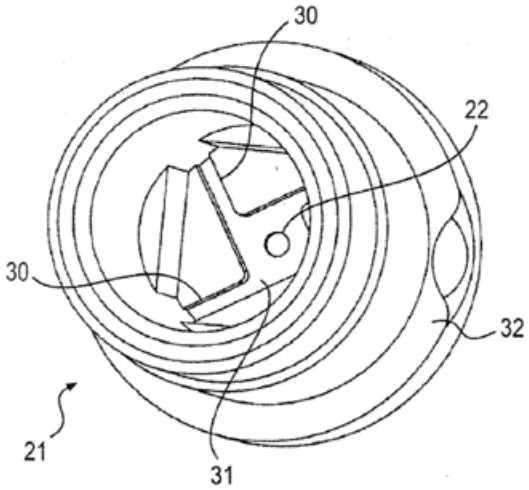


Figure 1b illustrates channels (30) formed at the planar interface between end wall and insert (21).

B05B 1/3442

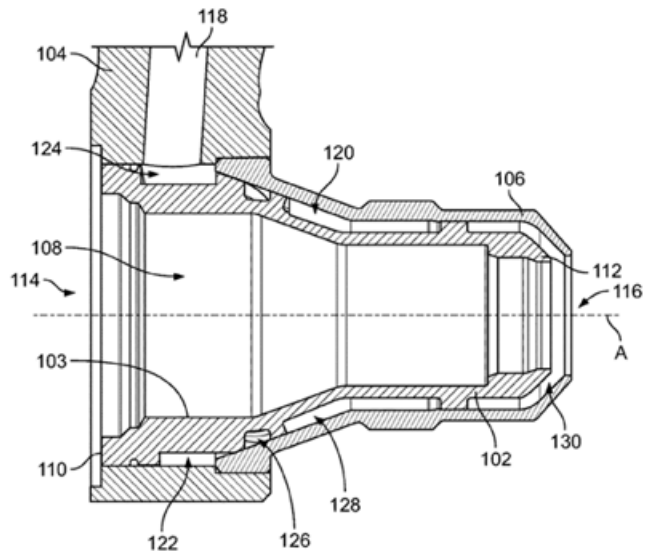
{the interface being a cone having the same axis as the outlet}

Definition statement

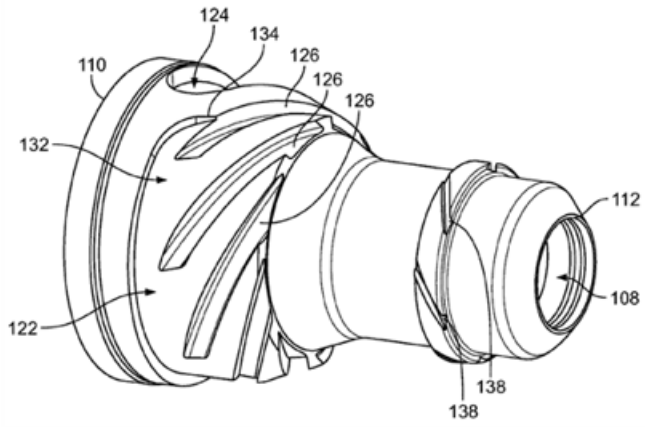
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate channels (126) formed at the conical interface between outer member (106) and inner member (102).

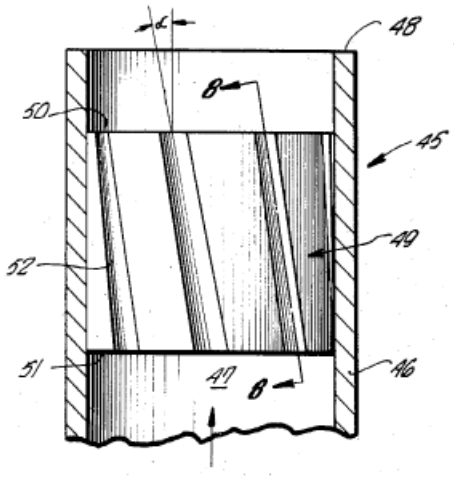
B05B 1/3447

{the interface being a cylinder having the same axis as the outlet}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates channels (52) formed at the cylinder interface between housing (46) and plug (49) that shares the same axis as the outlet (end of 48).

B05B 1/3457

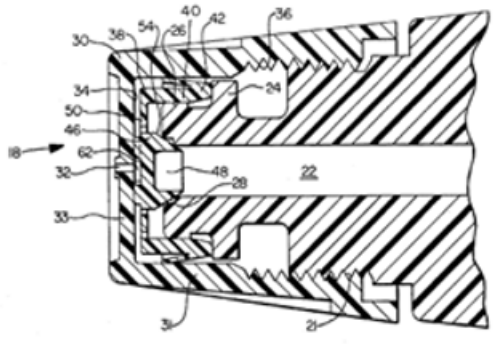
{in response to liquid pressure}

Definition statement

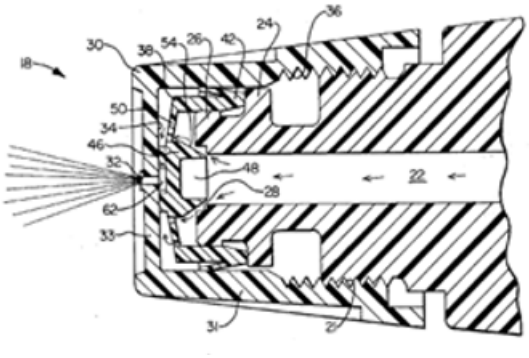
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate a cooperative element (having grooves 50) being movable in response to fluid pressure.

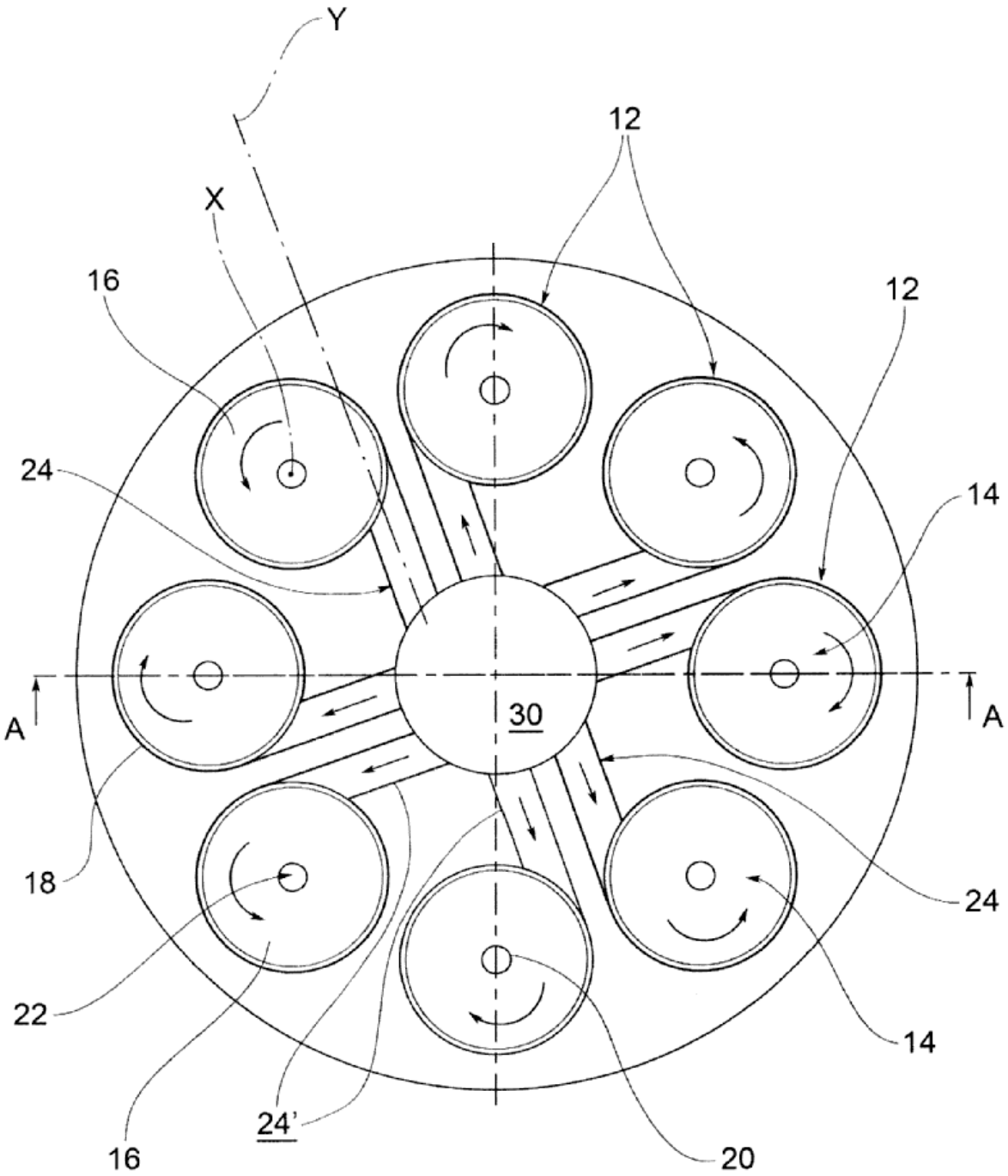
B05B 1/3463

{the channels extending outwardly, e.g. radially from the inside to the outside}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates channels (24) extending from inside (30) to the outside of a swirl plate for imparting a swirling motion within swirl chambers (14).

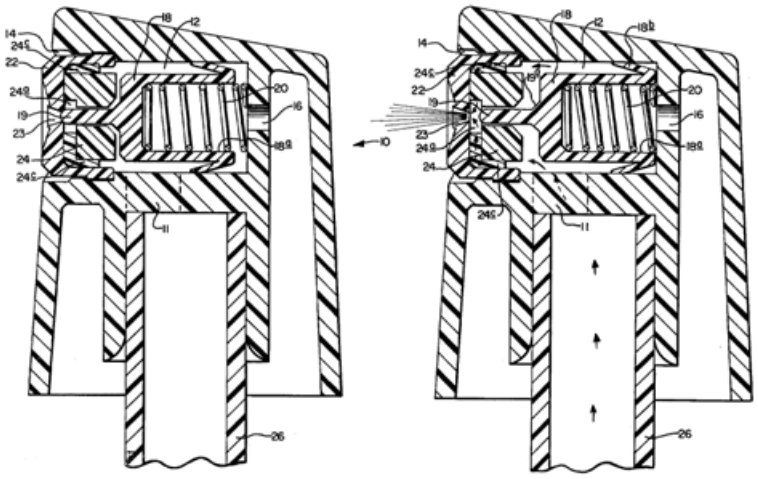
B05B 1/3473

{in response to liquid pressure}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a controlling means (valve 19), which controls a fluid that is entering or leaving a swirl chamber (24a) in response to the fluid (via fluid moving valve 19).

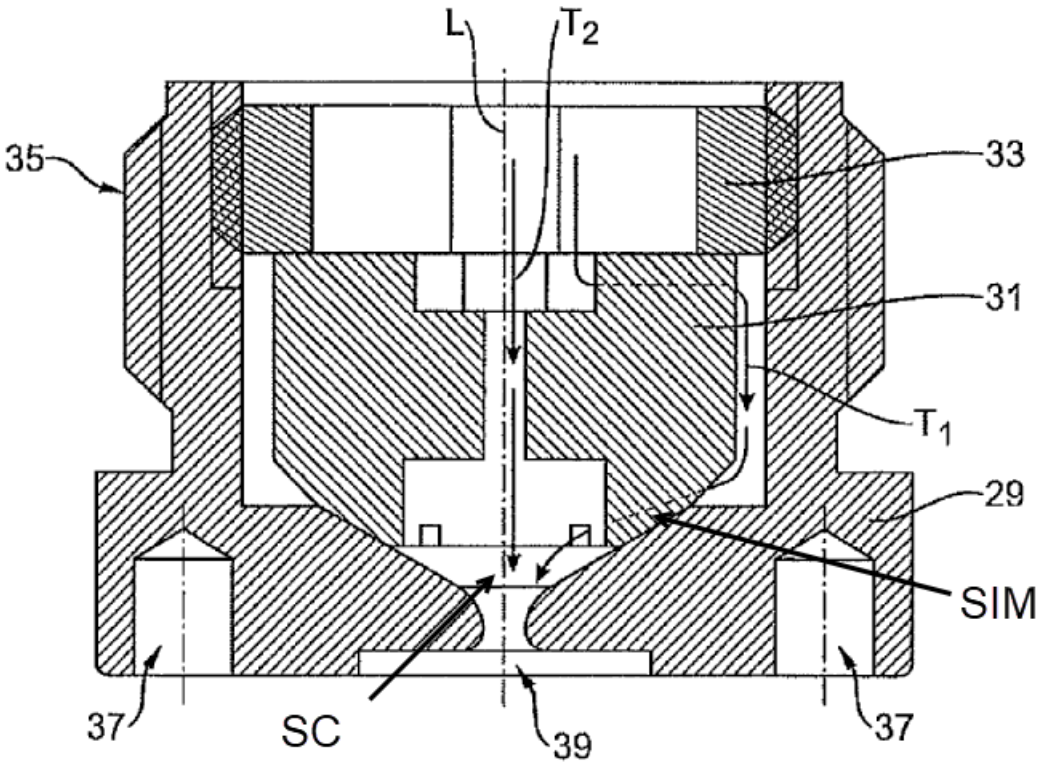
B05B 1/3478

{the liquid flowing at least two different courses before reaching the swirl chamber}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a first path (T1) and a second path (T2) reaching swirl chamber (SC).

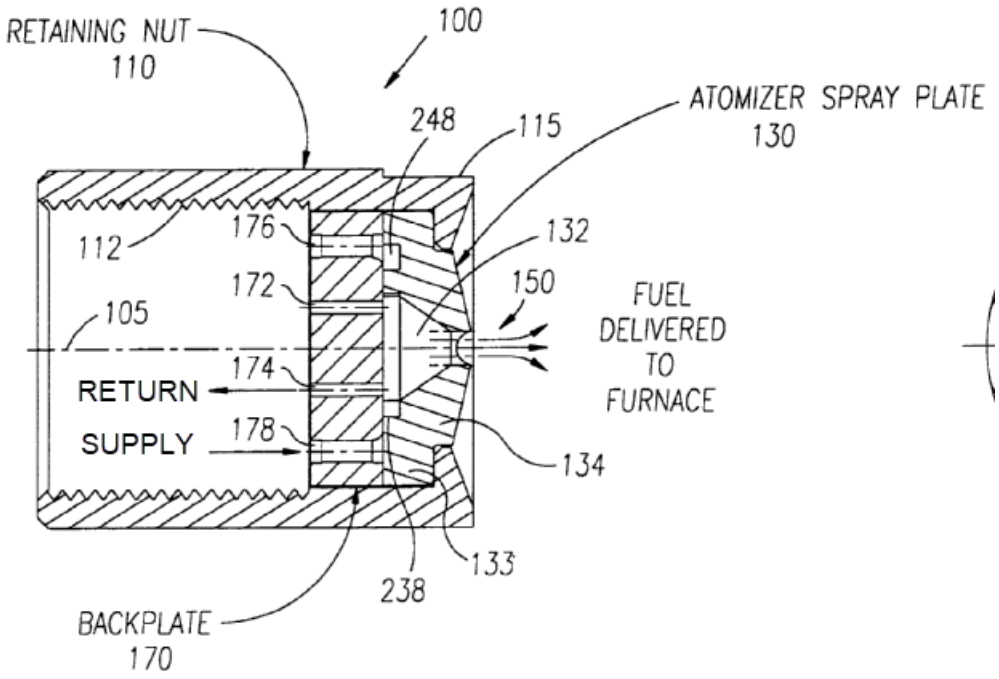
B05B 1/3484

{with a return channel extending from the swirl chamber by-passing the swirl imparting means}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates channels (172, 174) that bypass the swirl imparting means (248, 238) from a swirl chamber (132) back to a supply flow (178) toward the right side and the return flow (174). Further aspects include: fuel delivered to furnace toward the right side beyond the fuel outlet (150), atomizer spray plate (130), retaining nut (110) and backplate (170).

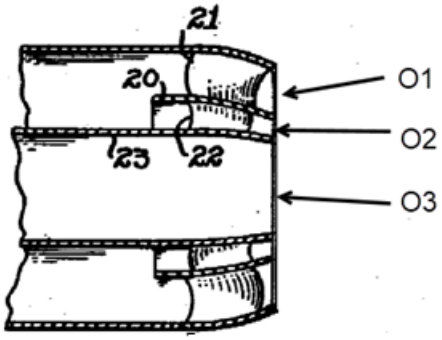
B05B 1/3489

{Nozzles having concentric outlets}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a spray nozzle having three concentric outlets (O1, O2, O3) dispensing a swirling discharge from vanes (21, 22).

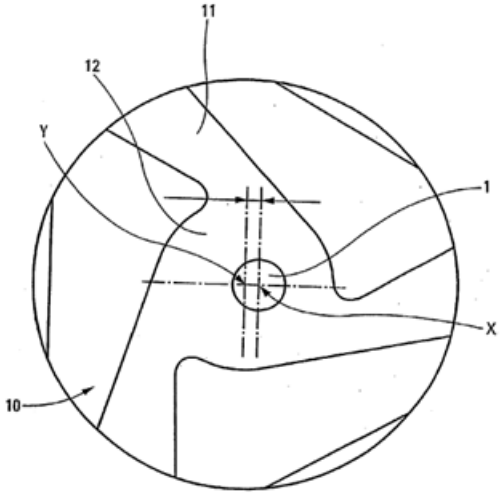
B05B 1/3494

{the discharge outlet being not on the axis of the swirl chamber}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates an outlet (1) on a different axis than that of a swirl chamber (12).

B05B 1/36

Outlets for discharging by overflow

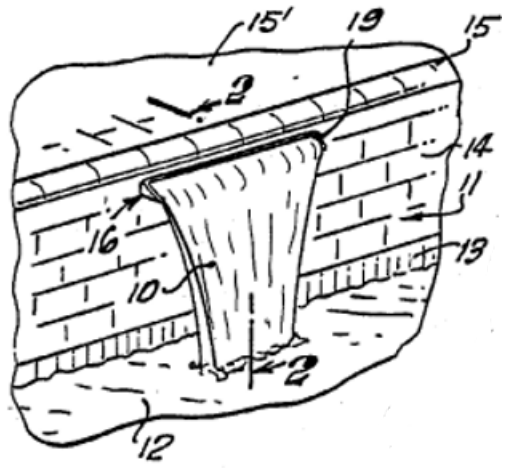
Definition statement

This place covers:

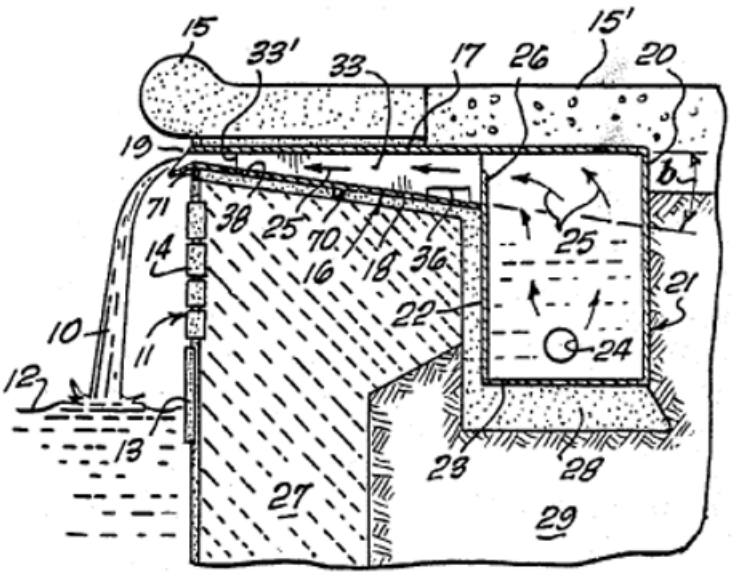
Nozzles, spray heads or other outlets for discharging by overflow. For example, an outlet having a trough, open tank or holder type fluid handling means, which depends for its distributing function upon accumulated fluid running over a top or an edge of a retaining wall or through a depression or notch in a wall.

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate an outlet (19) discharging by overflow of water (from 21).

B05B 3/00

Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements

Relationships with other classification places

Spray heads classified in this place are provided with moving elements, whereas spray heads classified in group B05B 13/04 move in their entirety, relative to an object to be sprayed.

Illustrative examples of subject matter classified in this place compared to subject matter classified in group B05B 13/04:

1.

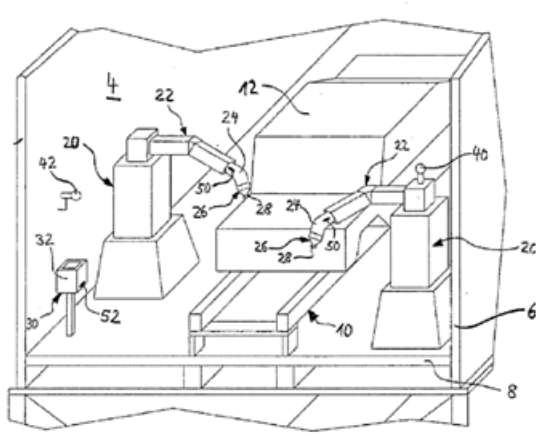


Figure 1 illustrates a moving spray head (24) provided with a rotary bell cup (28) that is classified in group B05B 3/1014 by itself. Spray head (24) is further moved by a supporting robot (20) having an articulated arm to paint work (12) that is classified in group B05B 13/0431.

2.

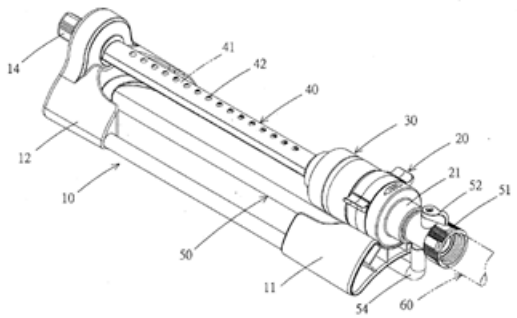


Figure 2 illustrates a sprinkler having an oscillating arm (40) that is classified in group B05B 3/0438. Since the sprinkler lies in its entirety on the ground and does not move during operation, this sprinkler shall not be classified in group B05B 13/04.

References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Washing or rinsing machines for crockery or tableware with movably-mounted spraying devices	A47L 15/18

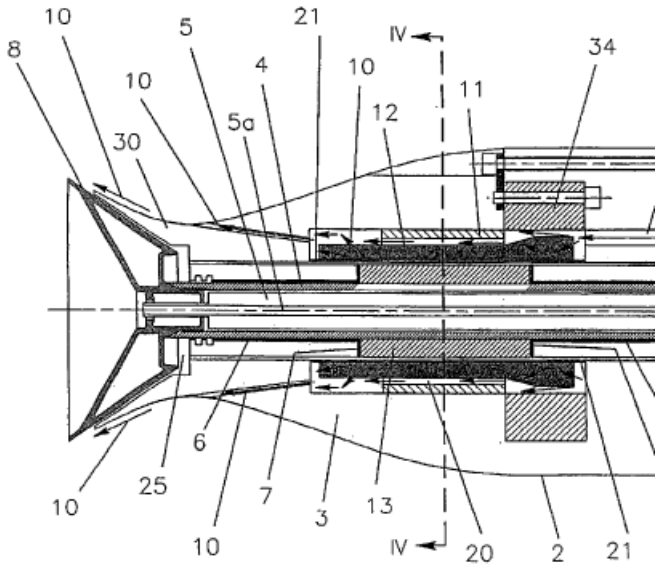
B05B 3/001

{incorporating means for heating or cooling, e.g. the material to be sprayed}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates shaping air (10) used as cooling air passing in ducts (20) to cool a rotor (13) and a stator (12).

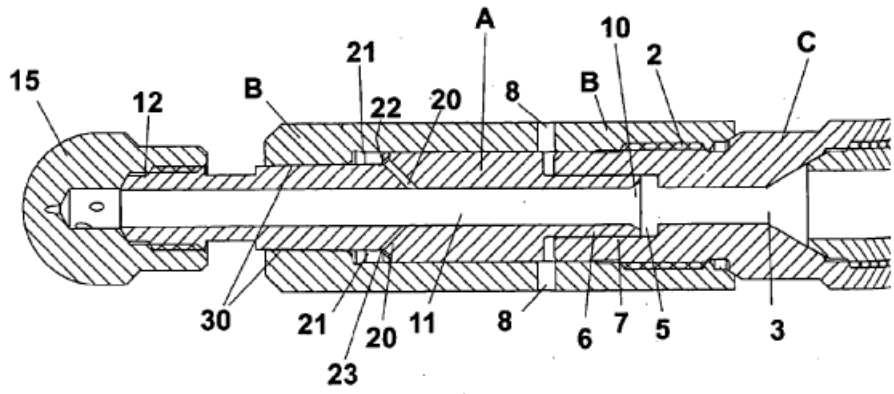
B05B 3/002

{comprising a moving member supported by a fluid cushion}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates an annular interface (7) in between a housing (C) and shaft (A) sized so as to minimize leakage while still allowing rotation of the shaft (A) with a slight cushion of liquid. Passages (20) enable liquid to enter chamber (21). Liquid pressure upon surface (23) creates a thrust force capable of countering the input force applied by the liquid onto an inlet end (6).

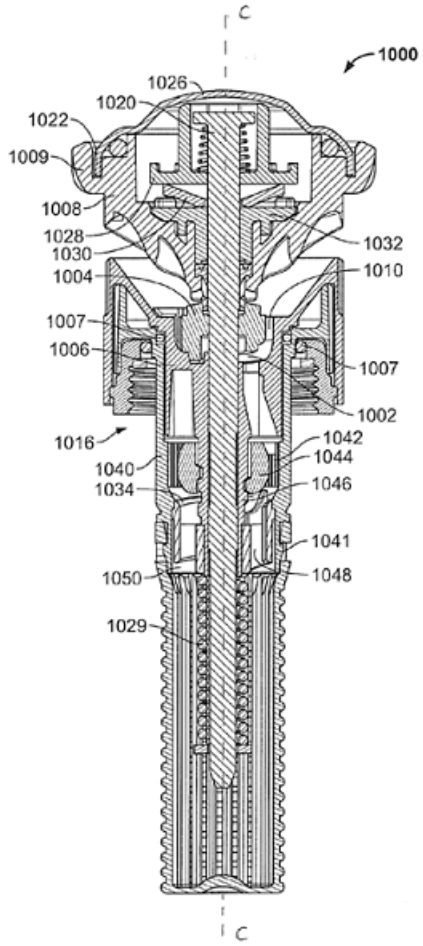
B05B 3/003

{with braking means, e.g. friction rings designed to provide a substantially constant revolution speed}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a frustoconical brake pad (1030) being part of a brake disposed in deflector (1008), which maintains rotation of the deflector (1008) at a relatively constant speed irrespective of flow-rate, fluid pressure or temperature. The brake includes brake pad (1030) sandwiched in between a friction disk (1028, above brake pad 1030) and seal retainer (1032, below brake pad 1030). Friction disk (1028) is held relatively stationary by shaft (1020), while seal retainer (1032) rotates with the deflector (1008). During operation of nozzle (1000), seal retainer (1032) is urged upwardly against brake pad (1030), which results in a variable frictional resistance that maintains a relatively constant rotational speed of deflector (1008), irrespective of the rate of fluid flow, fluid pressure or operating temperature.

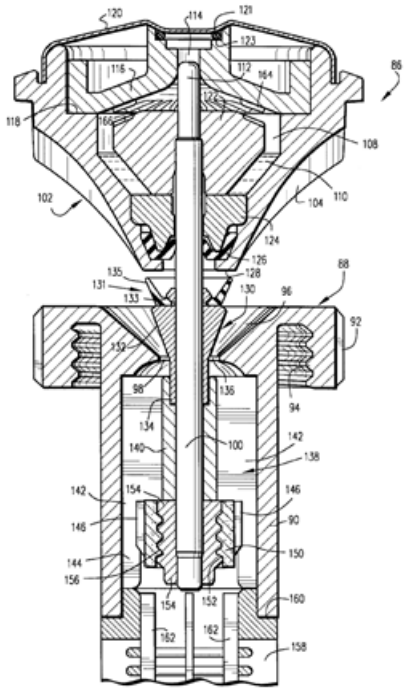
B05B 3/005

{using viscous dissipation, e.g. a rotor movable in a chamber filled with oil}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates how rotation of deflector (102) will be slowed by the viscous shearing of fluid (110) in between stator (124 on central shaft 112) and the deflector wall forming a chamber (108).

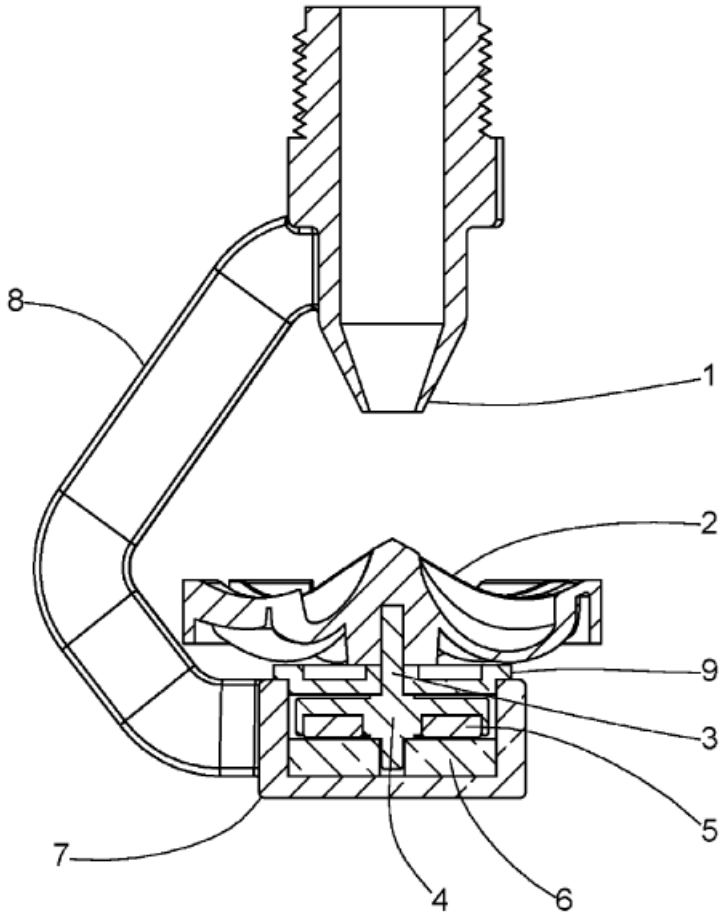
B05B 3/006

{using induced currents; using magnetic means}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates magnets (5) being used to dampen rotation of distributor (2).

B05B 3/007

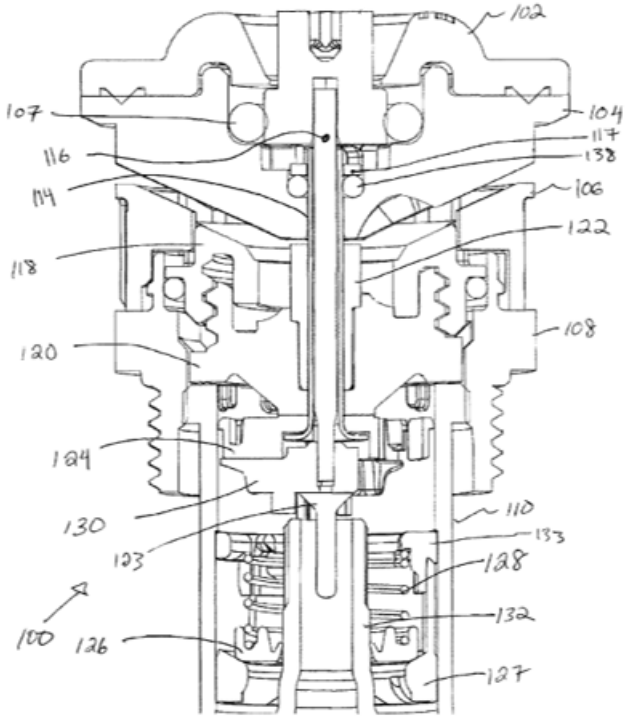
{with friction clutch means}

Definition statement

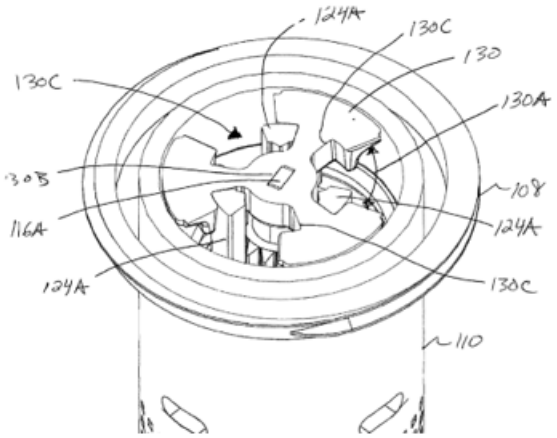
This place covers:

Illustrative example of subject matter classified in this place:

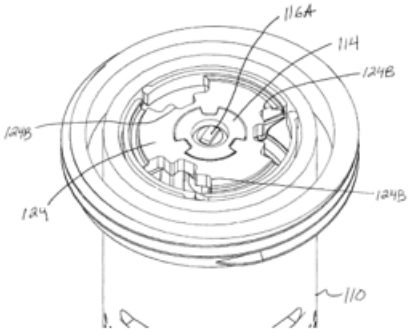
1a.


102
107
104
117
116
138
114
106
122
118
108
120
124
130
110
133
123
128
100
126
132
127

1b.


124A
130C
130
130C
130A
308
108
116A
124A
124A
130C
110

1c.


116A
114
124B
124B
124B
124
110

Figures 1a, 1b and 1c illustrate a sprinkler (100). The water flow through sprinkler (100) is adjusted by aligning spaces or apertures (130A) formed by throttle plate (130) with apertures (124B) in drive plate (124). Therefore, increasing alignment of apertures (130A, 124B) increases the flow out of sprinkler (100), while decreasing alignment of apertures (130A, 124B) decreases the flow. Throttle plate (130) is located below drive plate (124) and includes centre aperture (130B that engages with mating lower end (116A) of flow adjustment shaft (116). In this respect, rotating flow adjustment shaft (116) also rotates throttle plate (130) relative to drive plate (124). Throttle plate (130) is frictionally engaged to the bottom of drive plate (124), rotating throttle plate (130) with drive plate (124). Additionally, the flow of water through sprinkler (100) may cause slight movement and pressure of throttle plate (130) upwards against drive plate (124), further increasing friction. The frictional or clutching force between throttle plate (130) and drive plate (124) is such that it can be overcome when the user adjusts flow adjustment member (112) and therefore the flow of sprinkler (100).

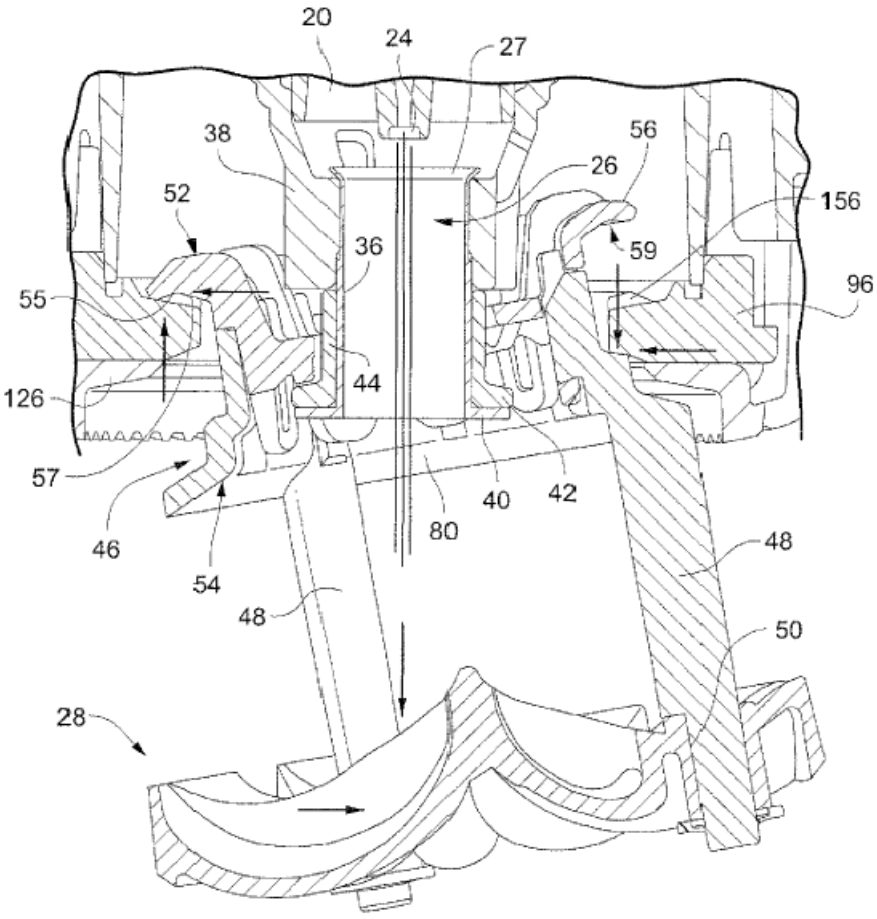
B05B 3/008

{comprising a wobbling or nutating element, e.g. rotating about an axis describing a cone during spraying (B05B 3/043 takes precedence)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a water deflection plate (28) carried by a starter sleeve (44) and a hanger tube (26) for wobbling or nutating motion.

References

Limiting references

This place does not cover:

Rotor nozzles	B05B 3/043

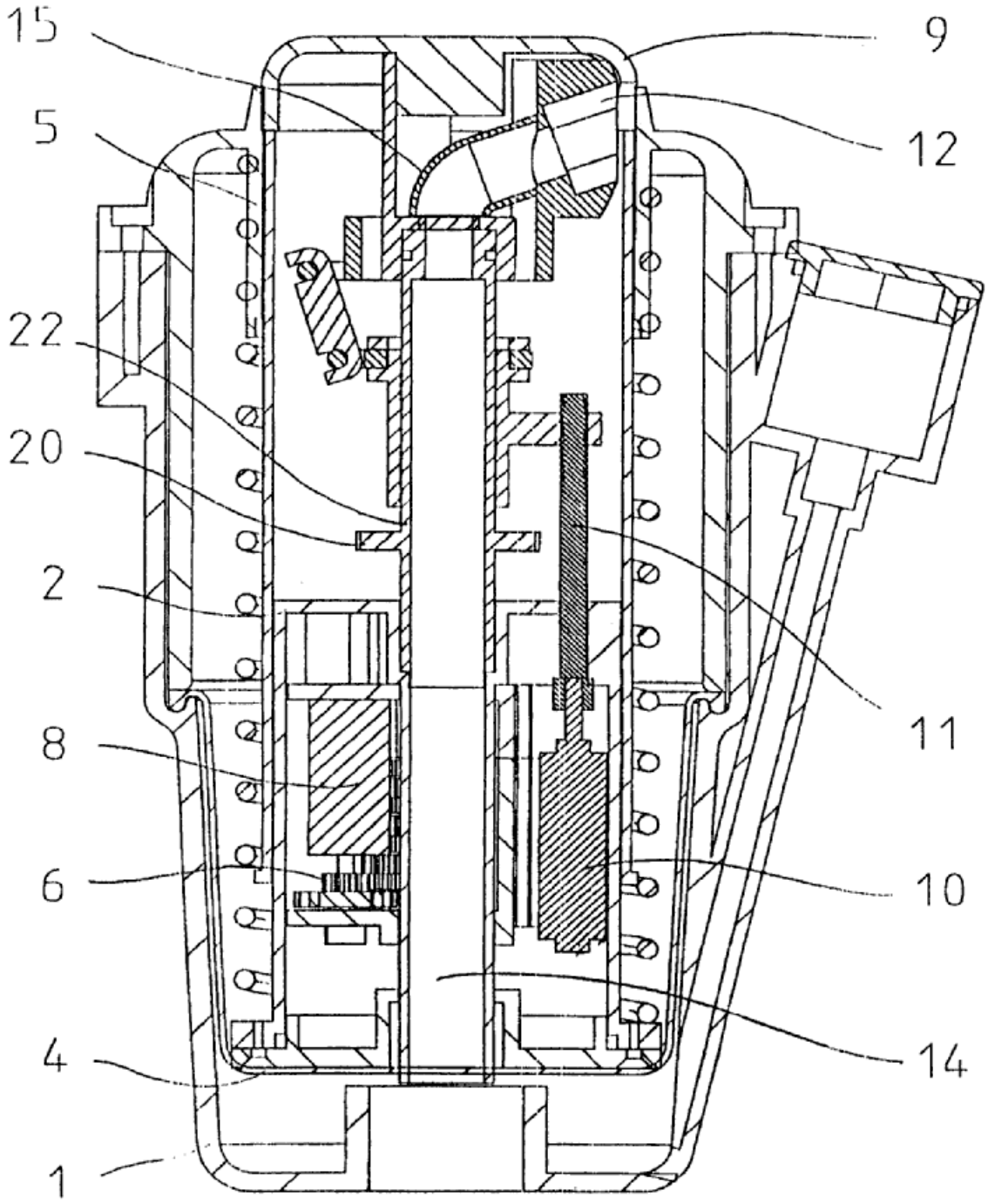
B05B 3/02

with rotating elements (electric spraying discharge apparatus characterised by having rotary outlet or deflecting elements B05B 5/04)

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates an electric motor (8) connected to a reduction gear (6) that is in mesh with a tooth wheel (20). Operation of the motor (8) rotates part (22) and nozzle (12).

References

Limiting references

This place does not cover:

Electric spraying discharge apparatus characterised by having rotary outlet or deflecting elements	B05B 5/04

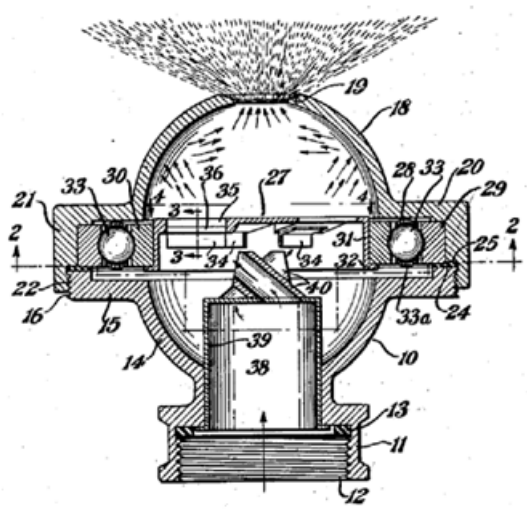
B05B 3/0202

{being deflecting elements (the liquid driven rotor being a deflecting rotating element B05B 3/0426; discharging over substantially the whole periphery of the rotating member B05B 3/10)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a deflecting rotating element (27).

References

Limiting references

This place does not cover:

Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements driven by the liquid or other fluent material discharged, comprising a liquid driven rotor, actuated downstream of the outlet elements, and the liquid driven rotor being a deflecting rotating element	B05B 3/0426
Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements discharging over substantially the whole periphery of the rotating member	B05B 3/10

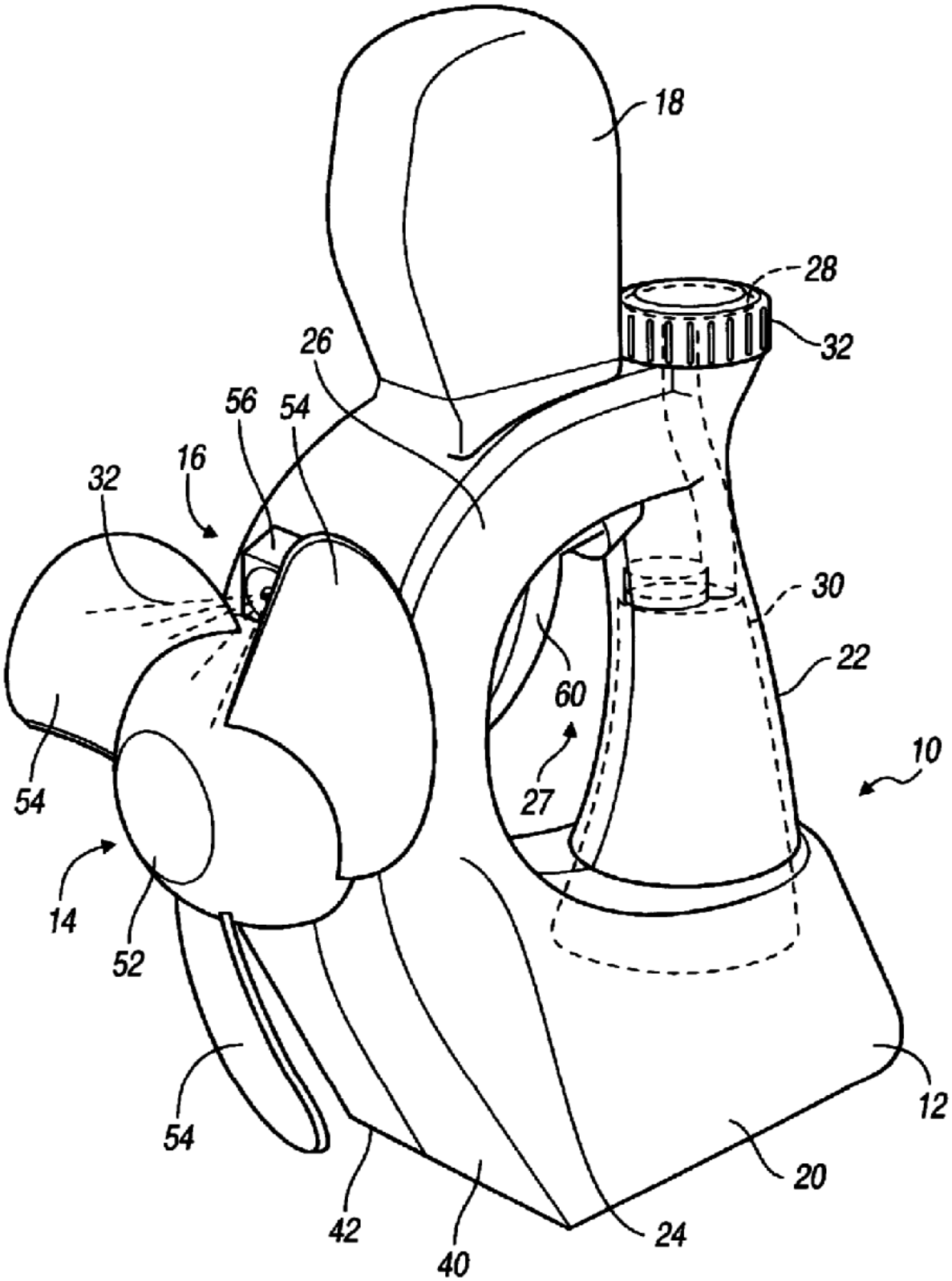
B05B 3/0204

{being a ventilator or fan}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a fan assembly (14) having blades (54) that deflect a stream (32).

B05B 3/021

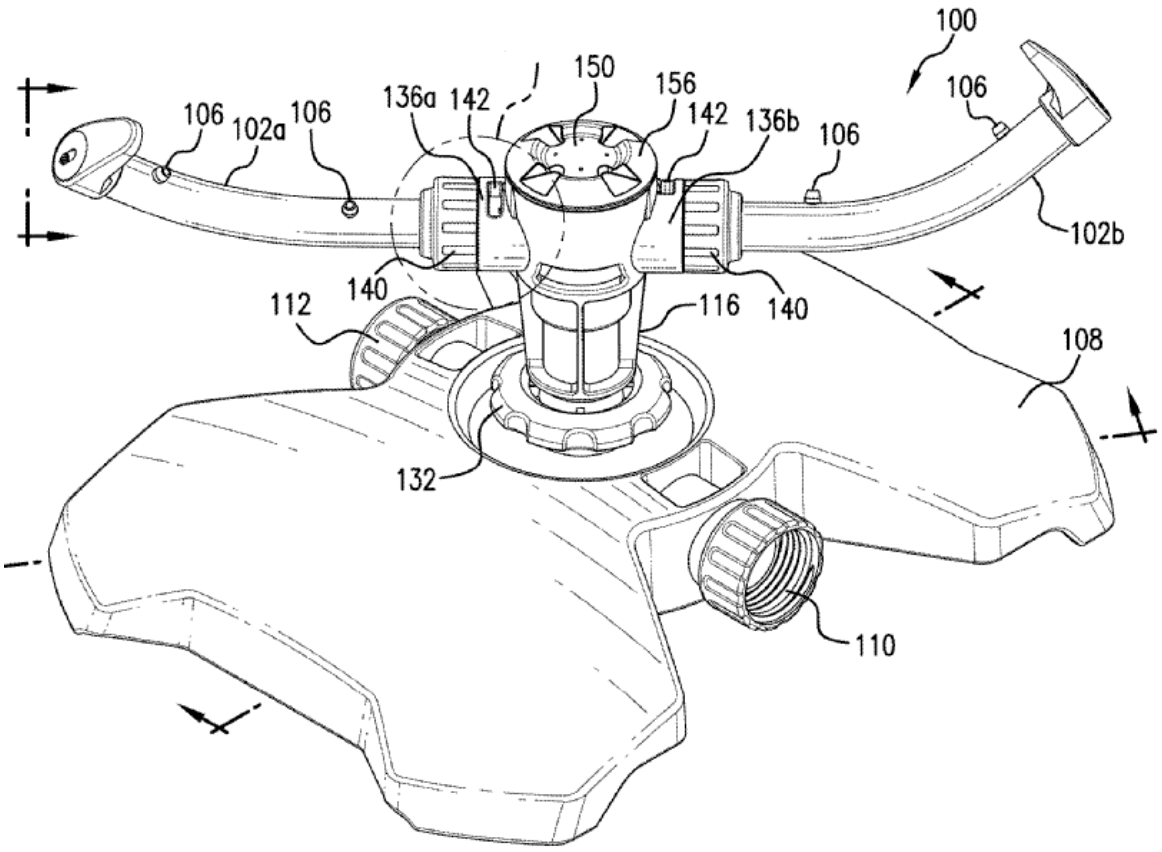
{with means for regulating the jet relative to the horizontal angular position of the nozzle, e.g. for spraying non-circular areas by changing the elevation of the nozzle or by varying the nozzle flow-rate (when the rotating elements are rotated by the liquid or other fluent material discharged B05B 3/0453)}

Definition statement

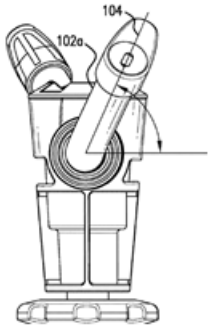
This place covers:

Illustrative examples of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate rotating jet arms (102a, 102b) of a sprinkler adjusting an angle of inclination (104) of nozzles (106), which is inversely proportional to the area of coverage of sprinkler (100), the rotation being driven by reaction of the water discharged nozzles (106) on the respective nozzle body.

2.

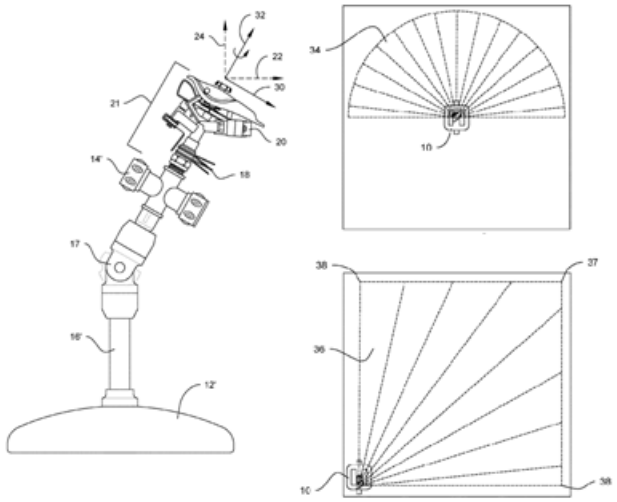


Figure 2 illustrates the angular position of the outlet element (20) that allows for the rotating impact sprinkler to spray noncircular areas.

3.

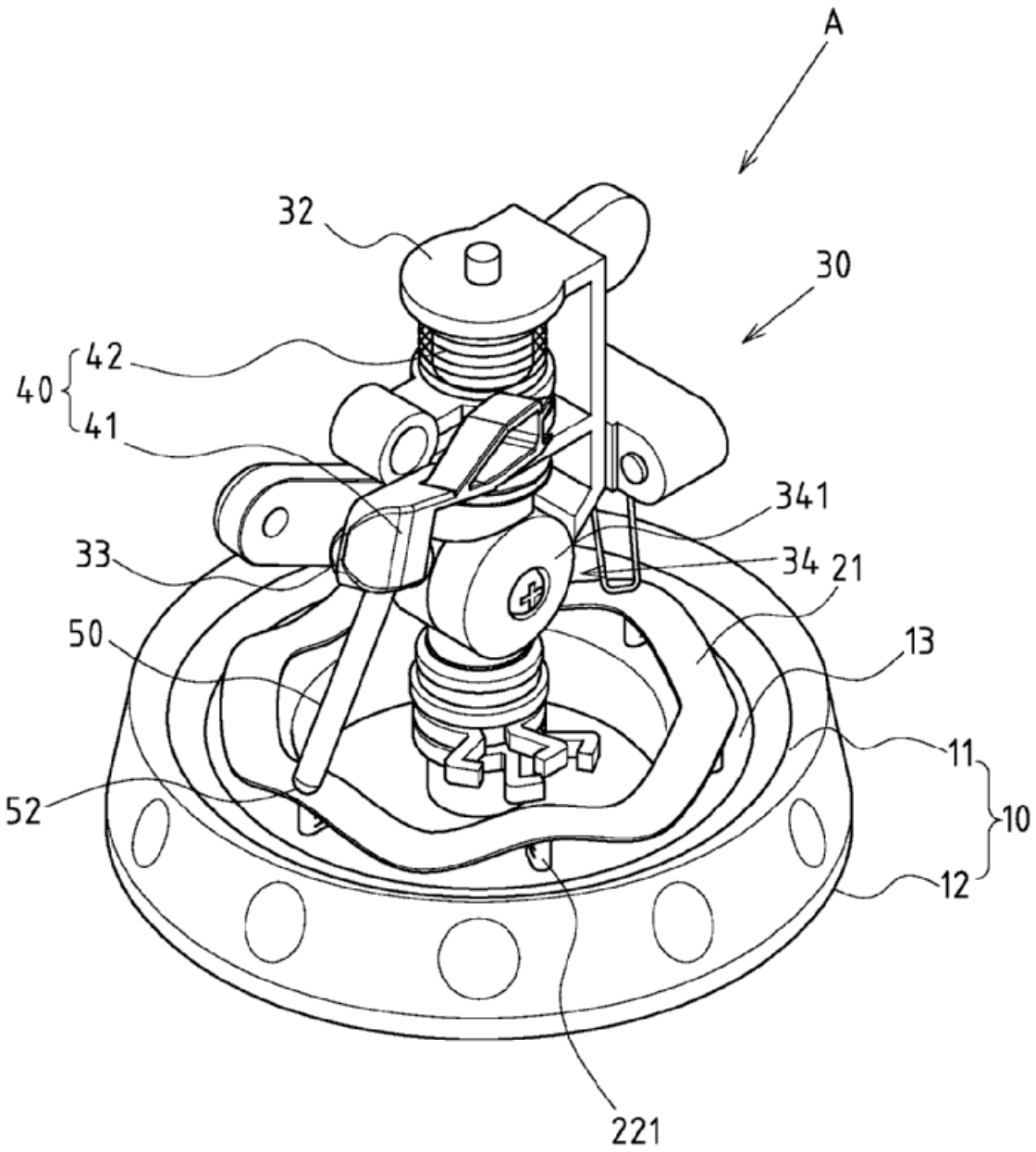


Figure 3 illustrates a percussive sprinkler (A) having a main body (30) that is rotated with vertical variation, a sprinkler head driving rod (50) shifting vertically along a circumferential path on a driving rod retaining surface (21, shaped for vertical variation during rotation) of an adjusting ring, so that the sprinkler head (33) is driven to swing vertically with changes of the discharge angle.

References

Limiting references

This place does not cover:

Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements driven by the liquid or other fluent material discharged, comprising a liquid driven rotor with automatic means for regulating the discharged jet relative to the angular position of the outlet elements or to the direction of rotation of the outlet elements	B05B 3/0453

B05B 3/026

{the fluid passing axially from one joint element to another}

Definition statement

This place covers:

Illustrative examples of subject matter classified in this place:

1.

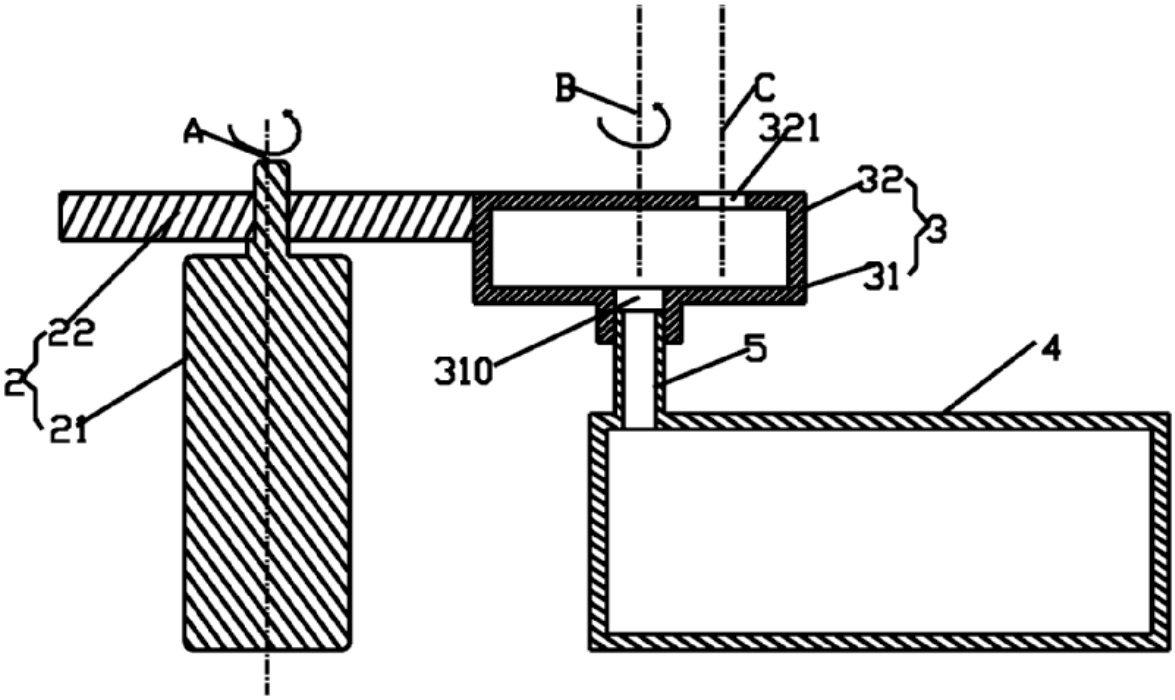


Figure 1 illustrates a rotational joint between a fixed tube (5) that contains a rotary bearing on the end connected to rotating tube (310).

2.

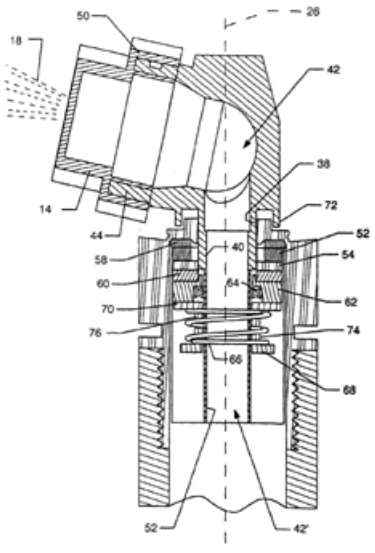


Figure 2 illustrates fluid passing from (42') into (42) to be sprayed (18), passing axially from the bottom member to that of the nozzle member (14), both elements being jointed to one another via bearing sleeve (40) so that the spray (18) sweeps over a surface due to rotation about central axis (26).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Pipes having adjustable joints with axial fluid passages in general	F16L 27/0804

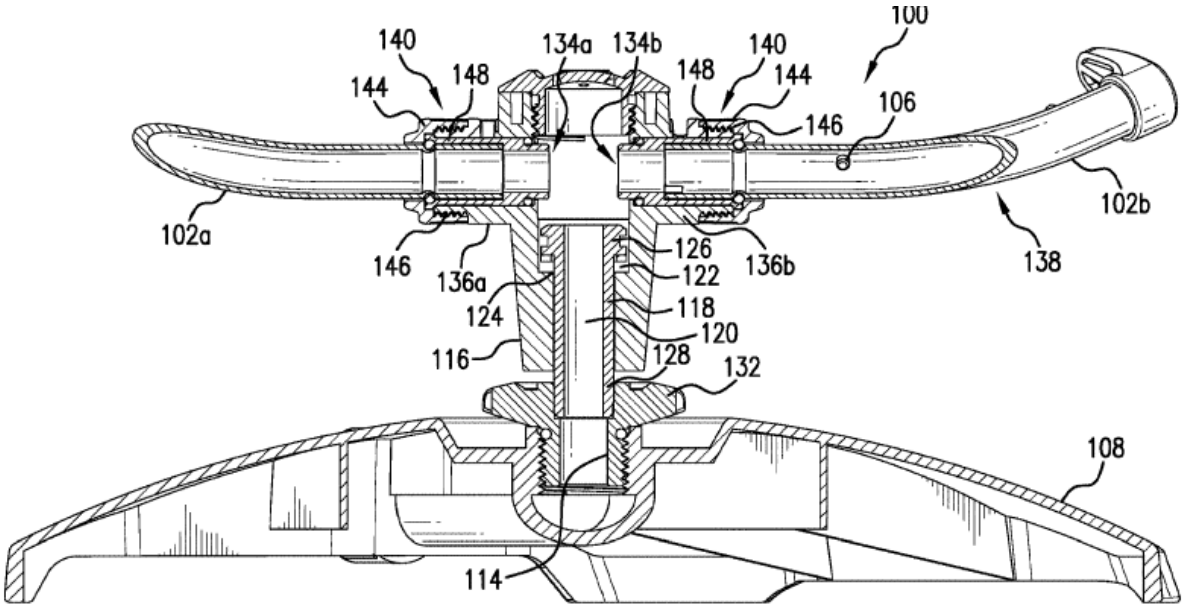
B05B 3/027

{with radial fluid passages}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates rotational joints of arms (102a, 102b) having inner radial fluid passages extending from the central fluid passage (120) to the outlets of holes (106).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Pipes having adjustable joints with radial fluid passages in general	F16L 27/087

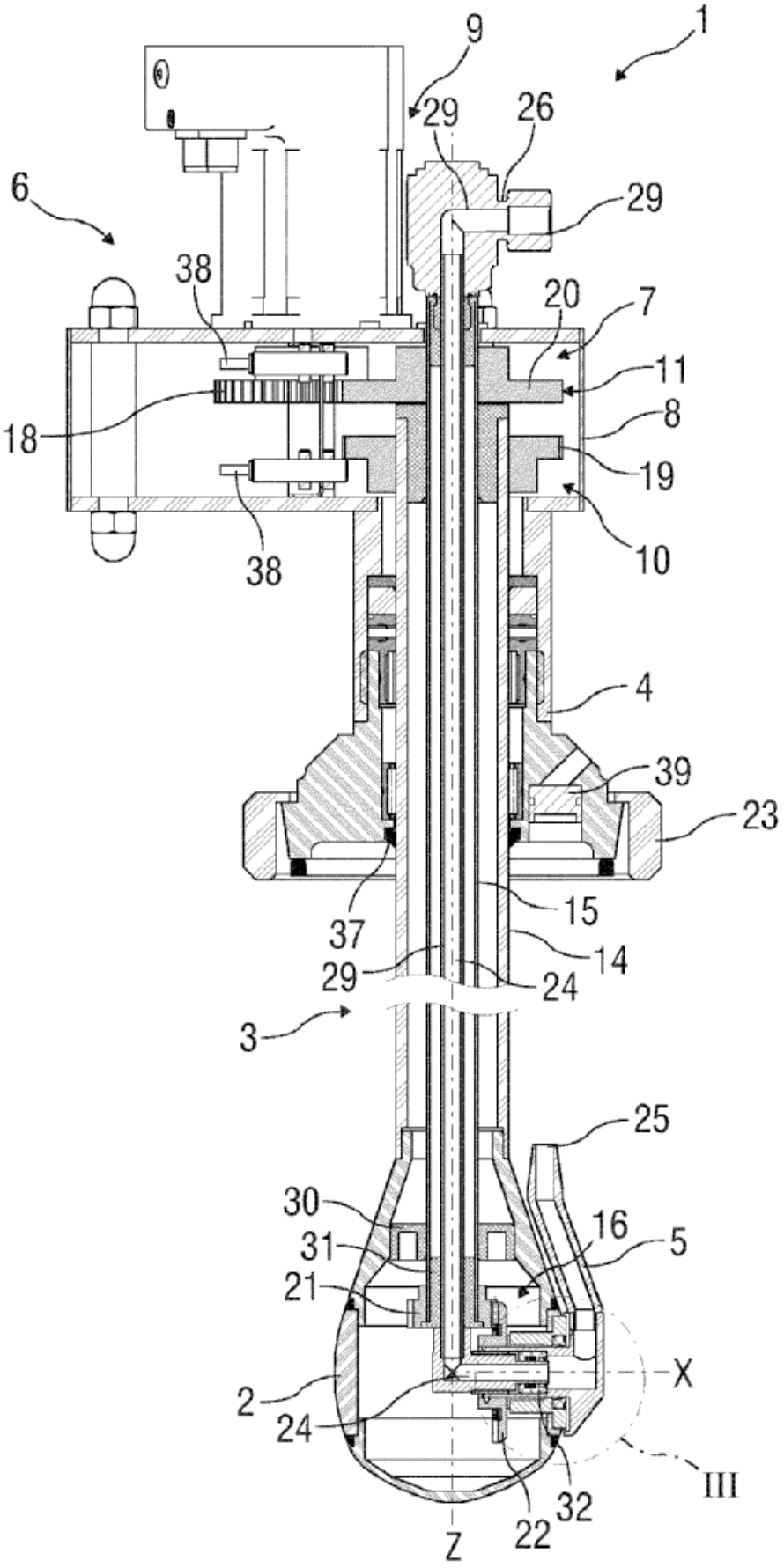
B05B 3/028

{the rotation being orbital (comprising liquid driven rotors wherein the movement of the outlet elements are a combination of two movements, one being rotational B05B 3/0444; when the rotating elements are rotated by jet reaction of the liquid or other fluent material discharged B05B 3/066)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a nozzle (25) rotating about both axes (X) and (Z).

References

Limiting references

This place does not cover:

Spraying or sprinkling apparatus with rotating outlet elements driven by the liquid or other fluent material discharged, the movement of the outlet elements being a combination of two movements, one being rotational	B05B 3/0444
Spraying or sprinkling apparatus with rotating elements, driven by the liquid or other fluent material discharged by jet reaction, the movement of the outlet elements being a combination of two movements, one being rotational	B05B 3/066

B05B 3/0412

{comprising a liquid driven piston motor}

Definition statement

This place covers:

Illustrative examples of subject matter classified in this place:

1.

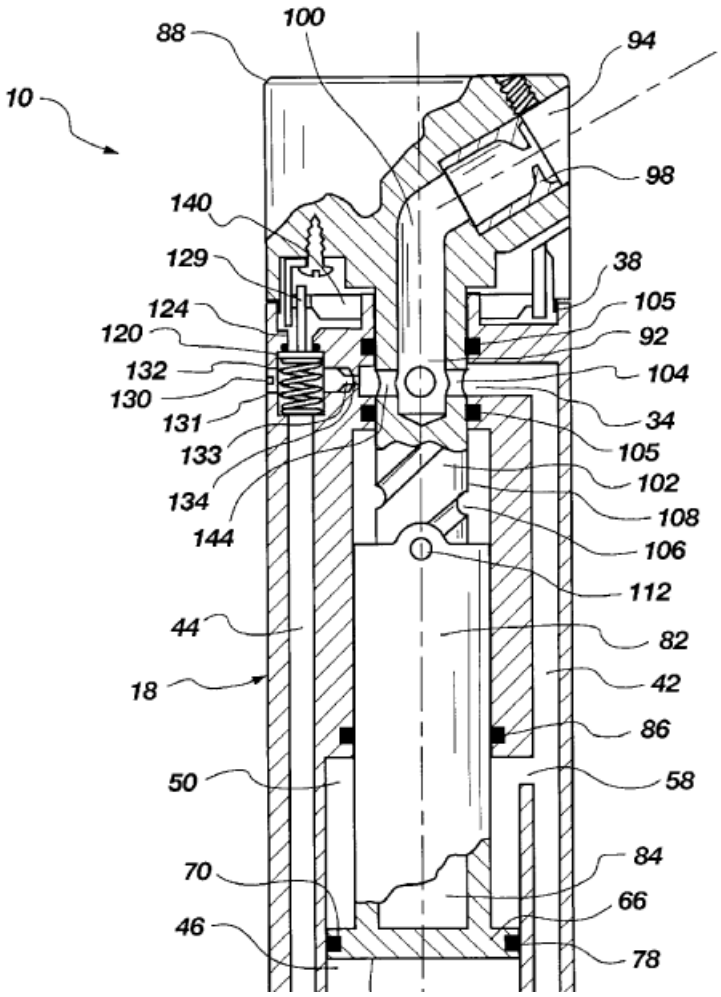


Figure 1 illustrates a sprinkler device (10) having a helical track (106) and a tracking element (112) coupled between a reciprocating piston (66) and a rotating head or nozzle (98) to convert the reciprocal linear motion of the piston to rotation motion of the head or nozzle.

2.

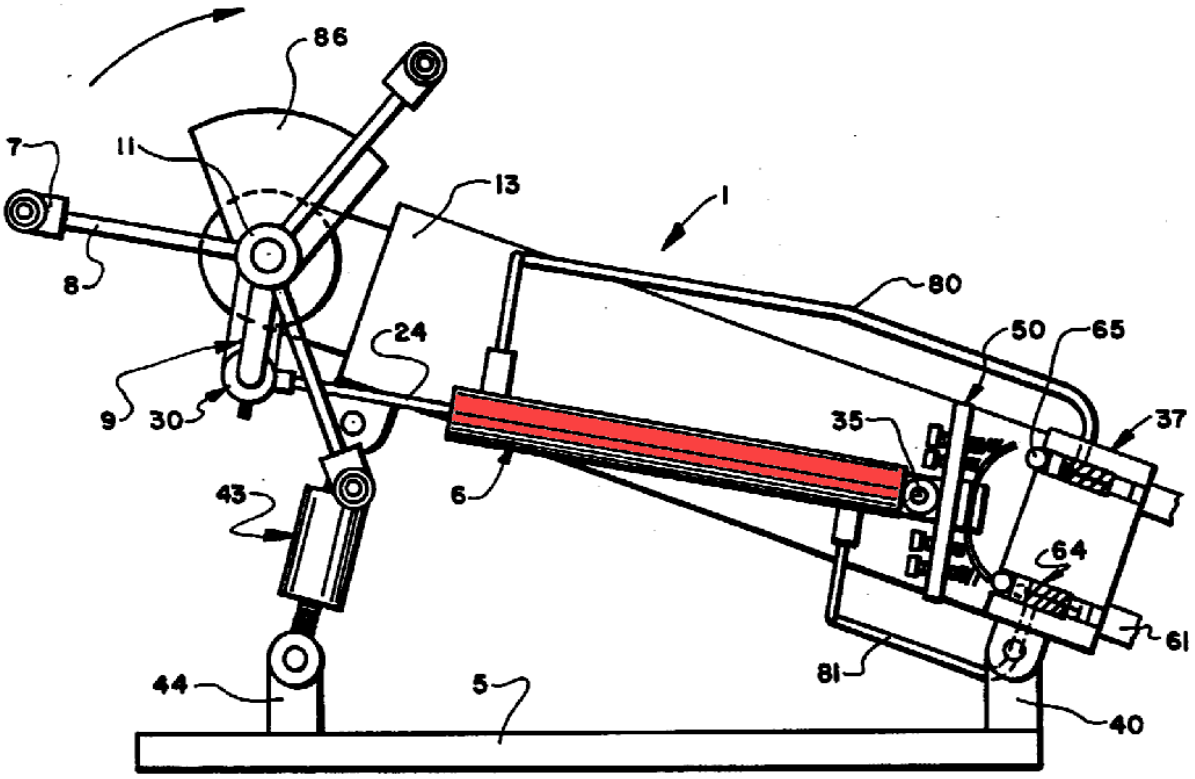


Figure 2 illustrates rotating nozzles (7) actuated by piston (6).

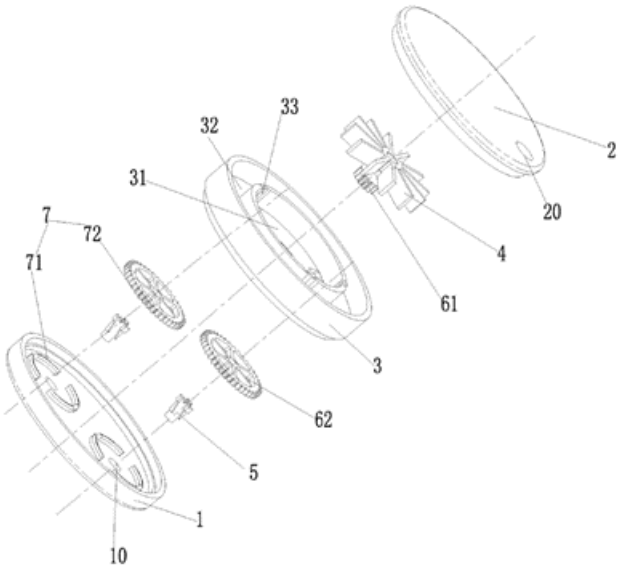
B05B 3/0417

{comprising a liquid driven rotor, e.g. a turbine}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates nozzles (5) rotated by rotor (4) via gears (61) and (62,72), wherein rotor (4) is driven by water.

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "rotor", "impeller", "turbine" and "rotator"

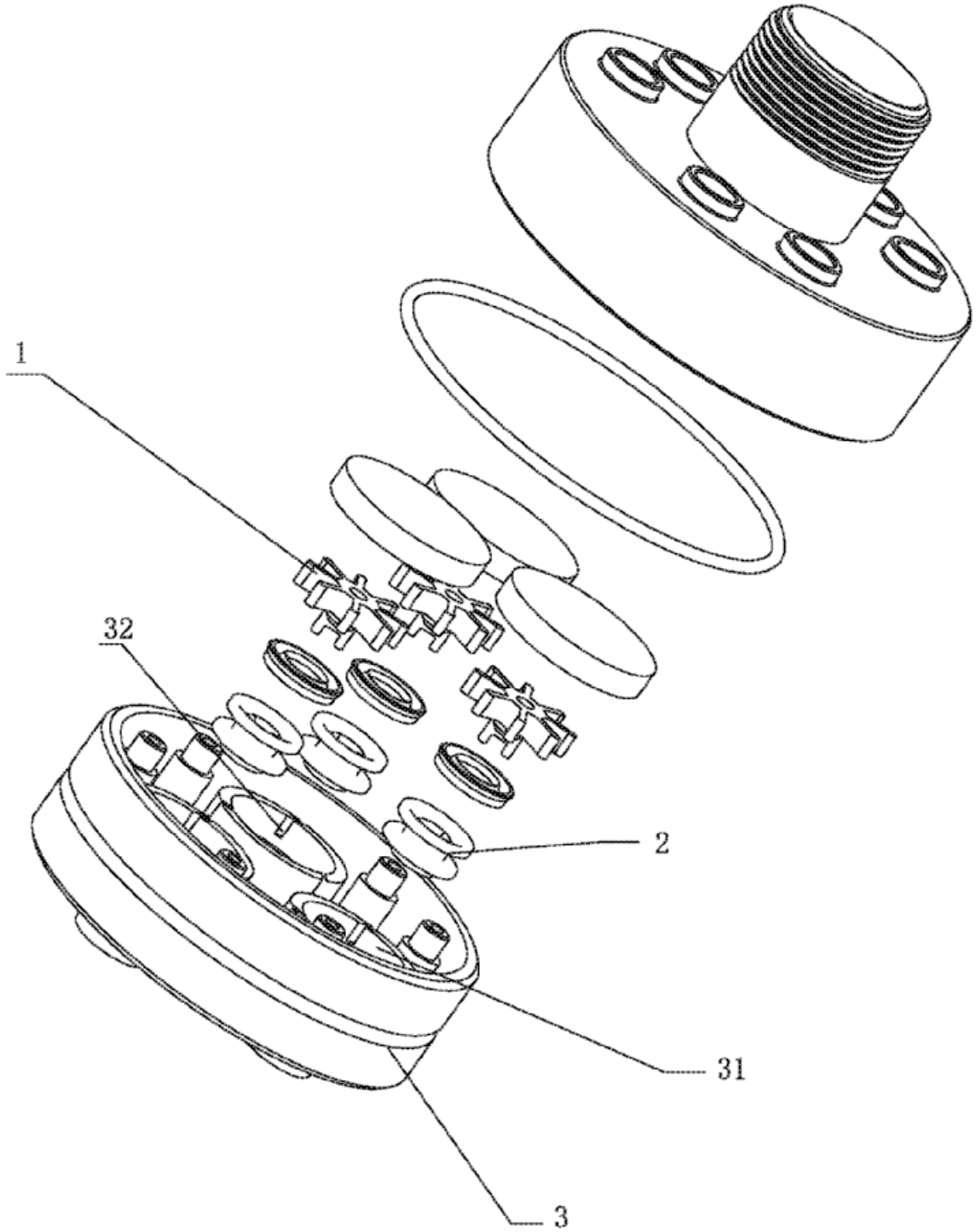
B05B 3/0419

{the liquid or other fluent material powering several rotors}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates several rotors (1) driven by water, wherein each rotor (1) actuates the rotation of a corresponding nozzle (2).

B05B 3/0421

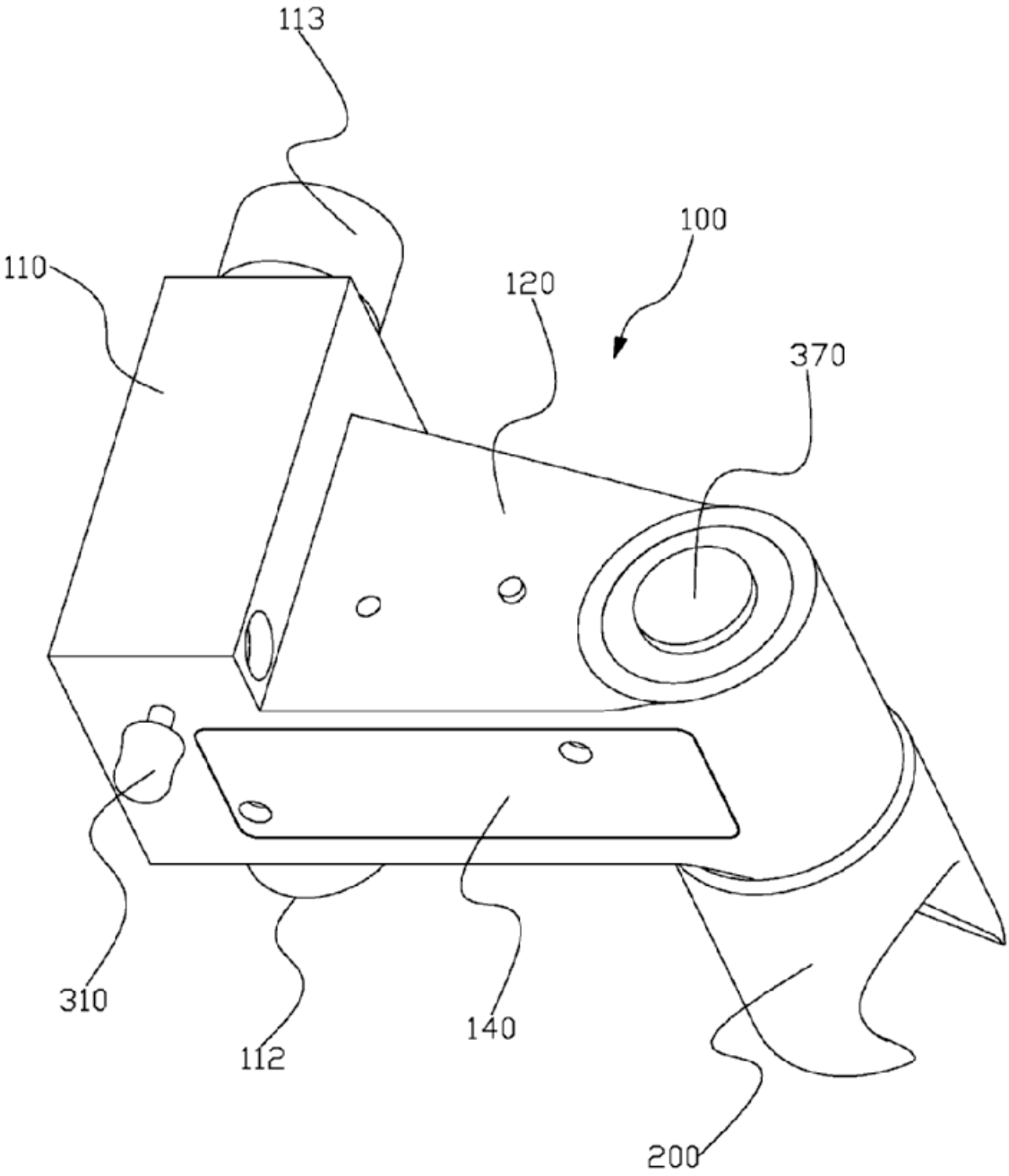
{provided with means for preventing rotation}

Definition statement

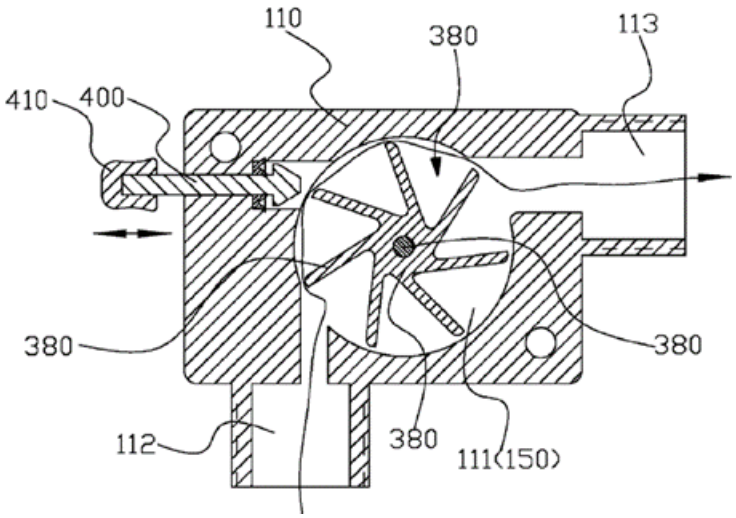
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate a stop (410) to disable rotation of rotor (380), wherein rotation of rotor (380, in Figure 1b) drives rotation of nozzle (113, in Figure 1a).

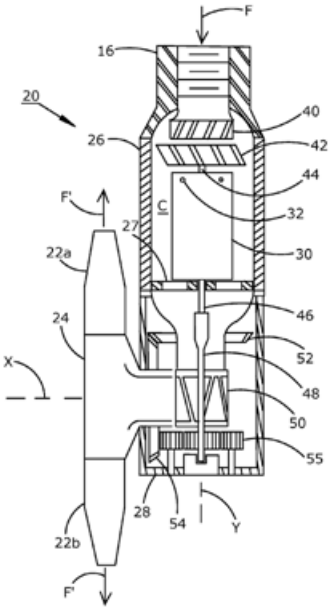
B05B 3/0423

{the rotor axis not being parallel to the rotation axis of the moving outlet elements, e.g. being perpendicular thereto}

Definition statement

This place covers:

Illustrative examples of subject matter classified in this place:



The Figure illustrates rotation of a rotor (42) not being parallel to the rotation axis of an outlet element (22a, 22b, 24).

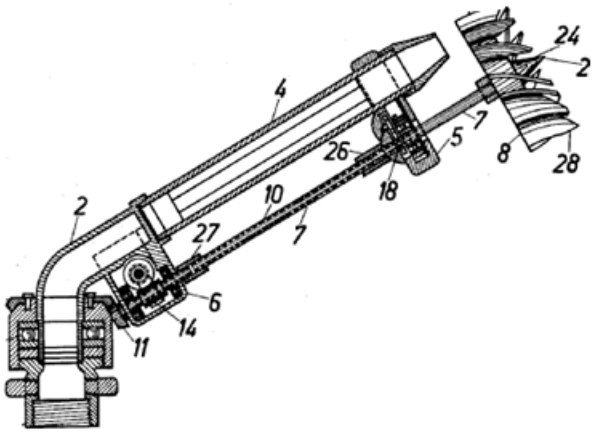
B05B 3/0425

{actuated downstream of the outlet elements}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a rotor (8) actuated downstream of nozzle (4) outlet, wherein the rotor (8) actuates rotation of the nozzle (4).

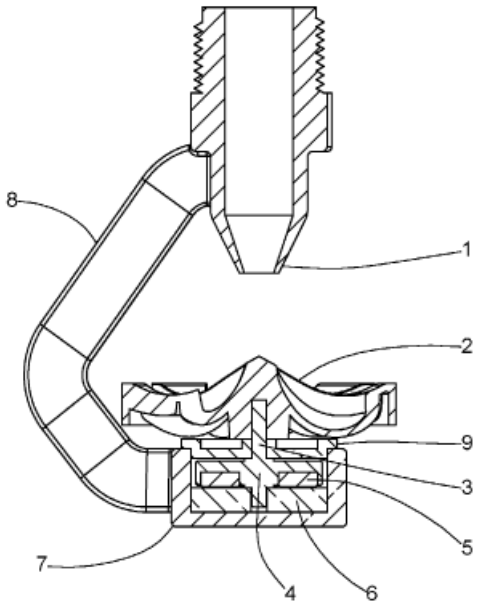
B05B 3/0426

{the liquid driven rotor being a deflecting rotating element}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a liquid driven rotor (2) that is a deflecting rotating element.

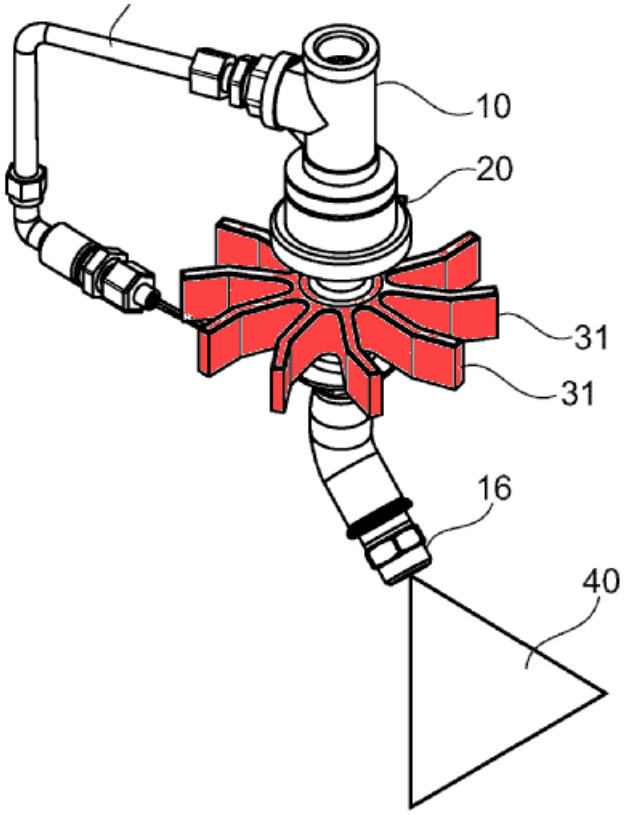
B05B 3/0429

{the rotating outlet elements being directly attached to the rotor or being an integral part thereof}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a rotor (31) directly attached on the outside of a nozzle (16) supply.

B05B 3/043

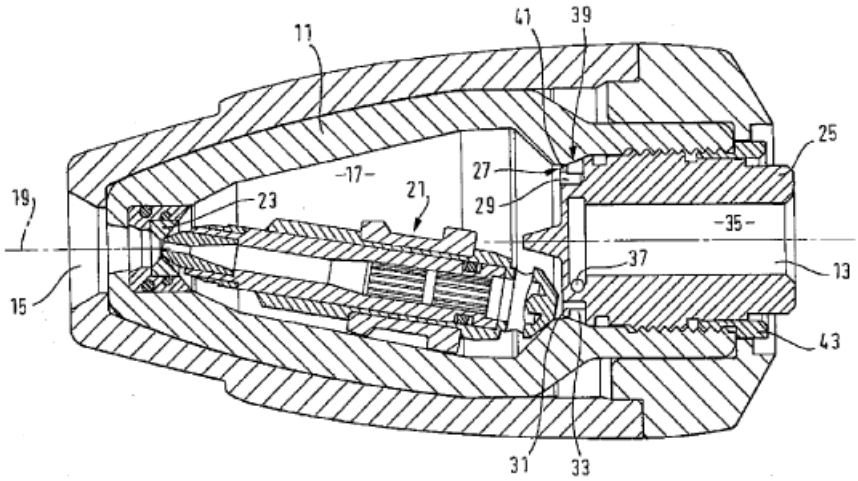
{Rotor nozzles}

Definition statement

This place covers:

Nozzles consisting of an element having an upstream part rotated by the liquid flow and a downstream part connected to the apparatus by a universal joint.

Illustrative example of subject matter classified in this place:



The Figure illustrates a rotor nozzle having an upstream part rotated inside a housing (11) and a downstream part connected to universal joint (23).

B05B 3/0432

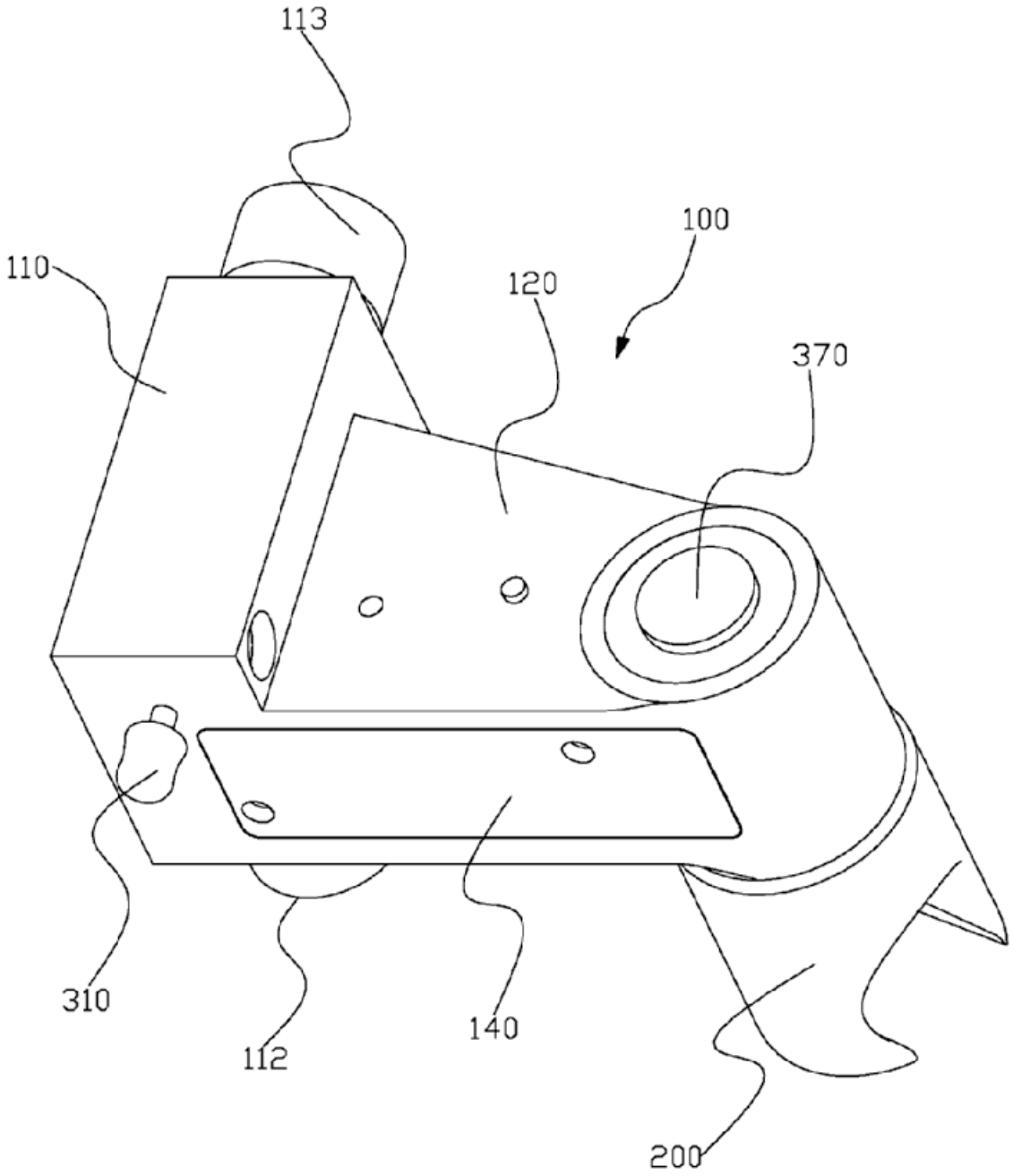
{the rotation of the outlet elements being reversible (B05B 3/0444 takes precedence)}

Definition statement

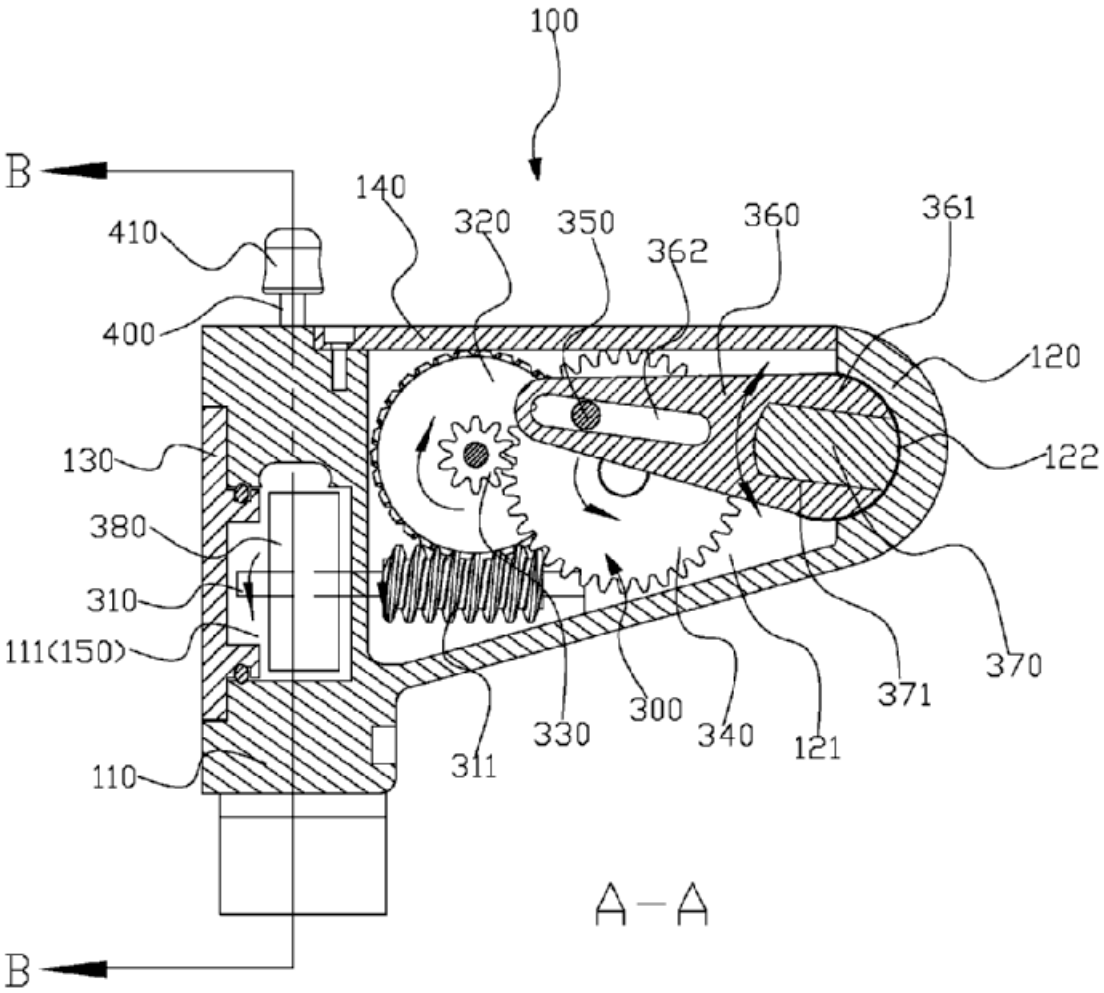
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate rotation of a rotor (380) that causes oscillation of a nozzle (113).

References

Limiting references

This place does not cover:

Spraying or sprinkling apparatus with rotating outlet elements driven by the liquid or other fluent material discharged, the movement of the outlet elements being a combination of two movements, one being rotational	B05B 3/0444

B05B 3/0435

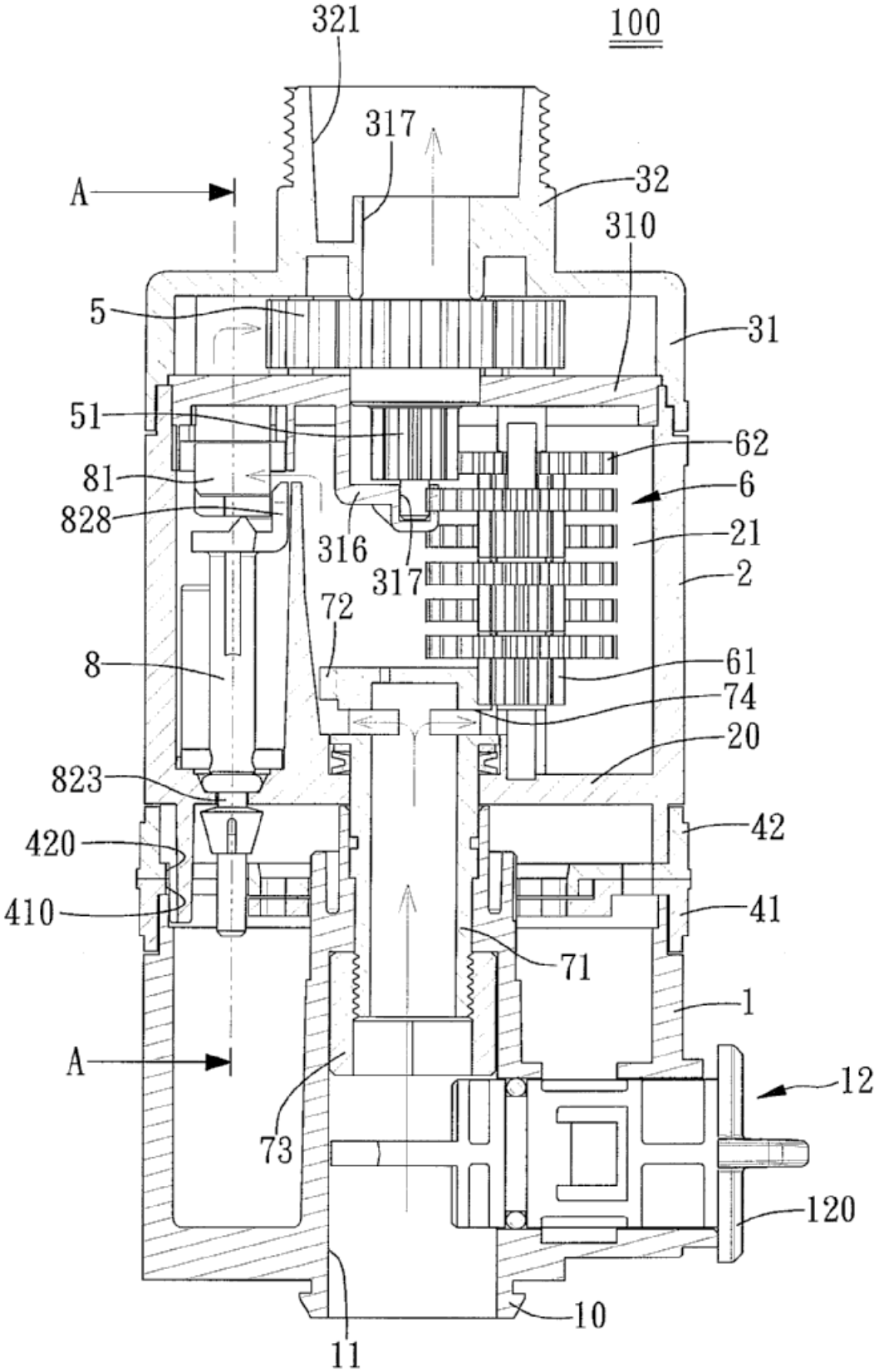
{by reversing the direction of rotation for the rotor}

Definition statement

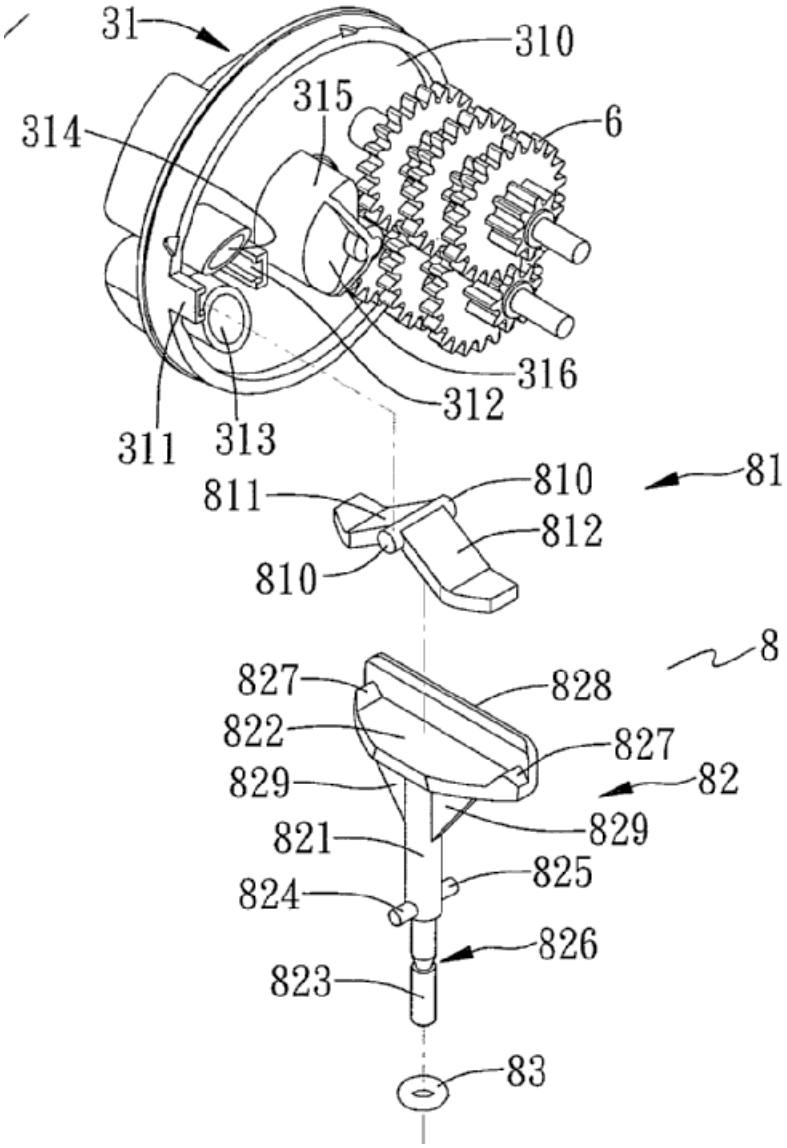
This place covers:

Illustrative example of subject matter classified in this place:

1a.


321
100
317
A
32
310
5
31
51
62
81
6
828
316
317
21
2
72
8
61
74
20
823
42
420
410
41
71
1
A
12
73
120
10
11

1b.



Figures 1a and 1b illustrate that when water reaches an impeller (5) through inlet (313), the water flow drives the impeller (5) in one rotational direction and when water reaches the impeller (5) through inlet (314) the water flow drives the impeller (5) in the other rotational direction.

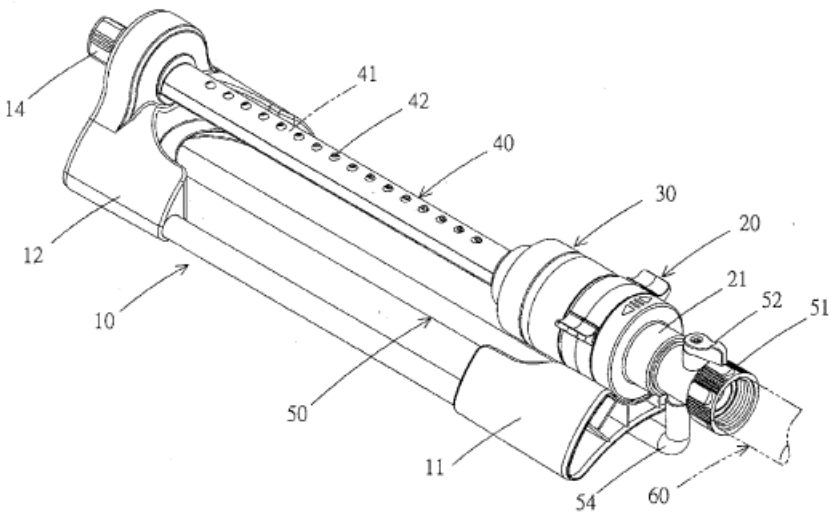
B05B 3/0438

{Tubular elements holding several outlets, e.g. apertured tubes, oscillating about an axis substantially parallel to the tubular element}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a tubular element (40) that has several outlets (42) and oscillates around an axis (axis of 40) parallel to the tubular element (40).

B05B 3/0444

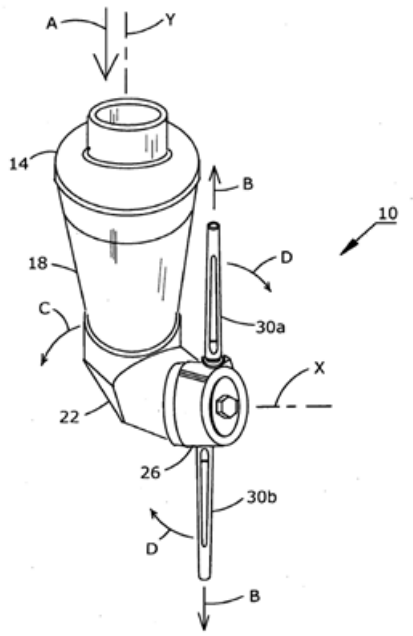
{the movement of the outlet elements being a combination of two movements, one being rotational}

Definition statement

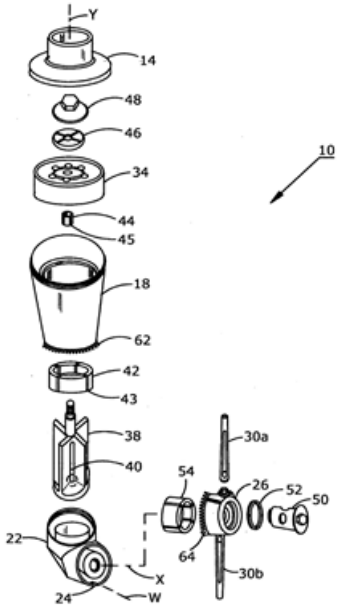
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate nozzles (30a, 30b) rotating about both axes (X) and (Y), i.e. a combination of two movements, at least one being rotational, wherein both rotations are actuated by a rotor (38) driven by a cleaning fluid.

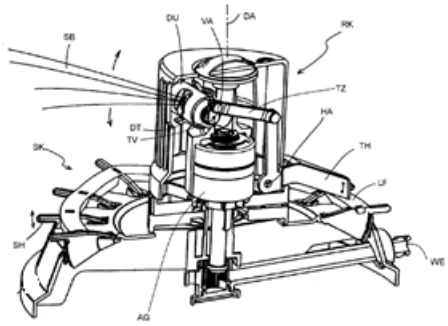
B05B 3/0446

{with automatic means for regulating the discharged jet (B05B 3/0444 takes precedence)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a rotating irrigating nozzle (DU) having an outlet opening area that is varied according to a curved tread (LF), wherein rotation of the nozzle (DU) is actuated by a rotor within a driving housing (AG) the rotor being driven by water.

References

Limiting references

This place does not cover:

Spraying or sprinkling apparatus with rotating outlet elements driven by the liquid or other fluent material discharged, the movement of the outlet elements being a combination of two movements, one being rotational	B05B 3/0444

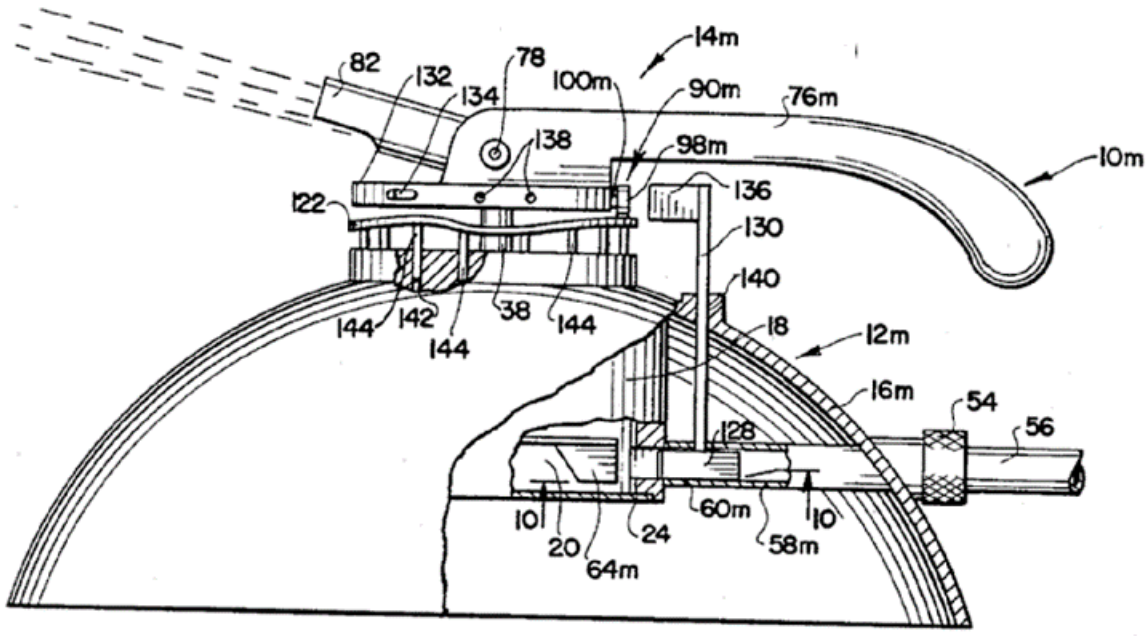
B05B 3/0453

{relative to the angular position of the outlet elements or to the direction of rotation for the outlet elements, e.g. when spraying non-circular areas}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a lawn sprinkler, when roller (98m) rolls along the top of cam track (122), a rotary nozzle (82) raises and lowers about pivot pin (78), wherein rotation of the nozzle (82) about a vertical axis is actuated by rotor (64m), driven by water.

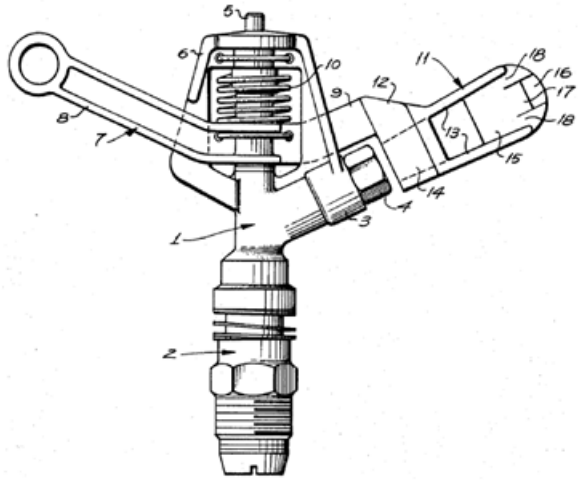
B05B 3/0455

{the outlet elements being rotated by a deflecting element being successively moved into the discharged jet by the action of a biasing means and out of the discharged jet by the discharged jet}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates how the spray jet discharged from the outlet (4) actuates a movable deflector (11) which is successively moved out of the jet-by-jet action and brought back into the jet by the action of the spring (10).

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "impact sprinkler", hammer sprinkler", "impulse type sprinkler" and "percussive sprinkler"

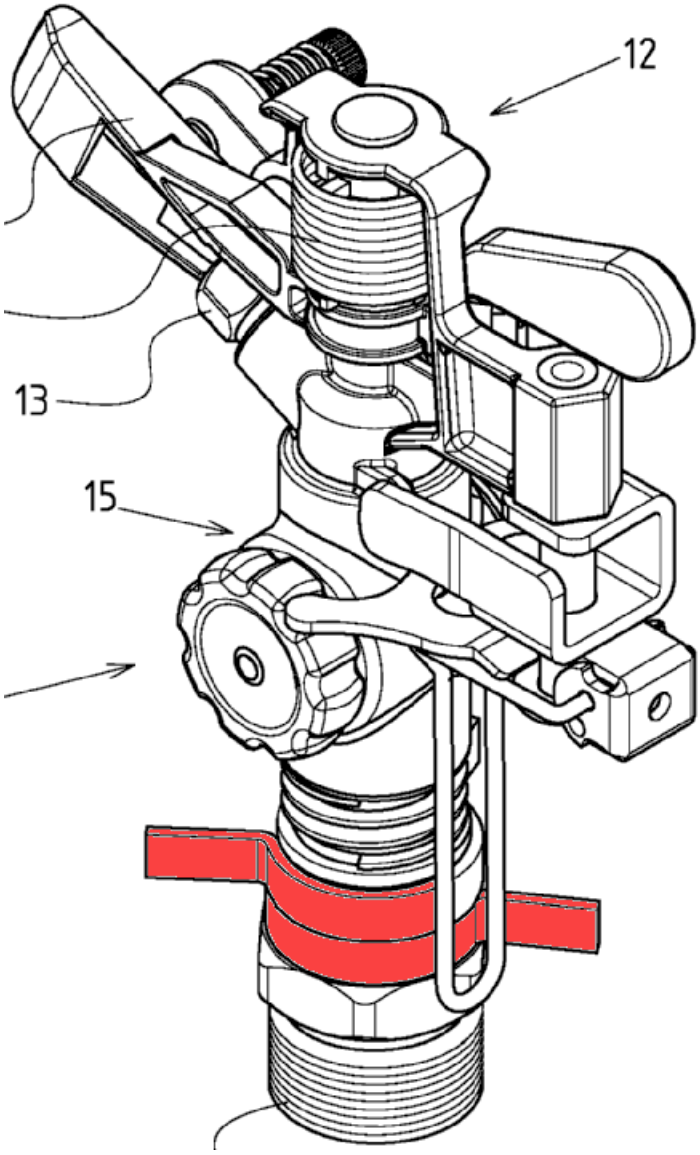
B05B 3/0461

{the rotation of the outlet elements being reversible}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates an impact sprinkler (12) in which the rotation of outlet element (13) is reversed by the abutments (as stops extending outward on both sides from the outside of the supply pipe).

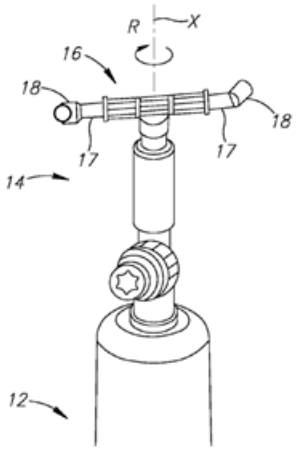
B05B 3/06

by jet reaction

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a rotating portion including two arms (17) and two nozzles (18), each nozzle attached to an end of a respective arm (17). Nozzles (18) are adapted to discharge liquid received from device (12) to the outside environment along directions that form moments of force urging the rotating portion to rotate in a direction (R) about an axis (X).

References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Washing or rinsing machines for crockery or tableware with rotary spraying devices moved by means of the sprays	A47L 15/23

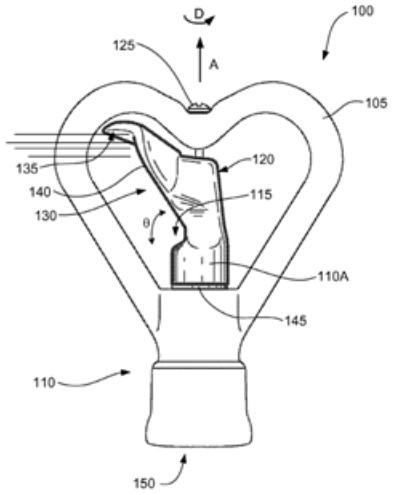
B05B 3/063

{using a member, e.g. a deflector, for creating the tangential component of the jet}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a deflector (120) that creates a tangential component of the jet as indicated by the lines leaving the deflector, this tangential component causing sprinkler (100) to rotate.

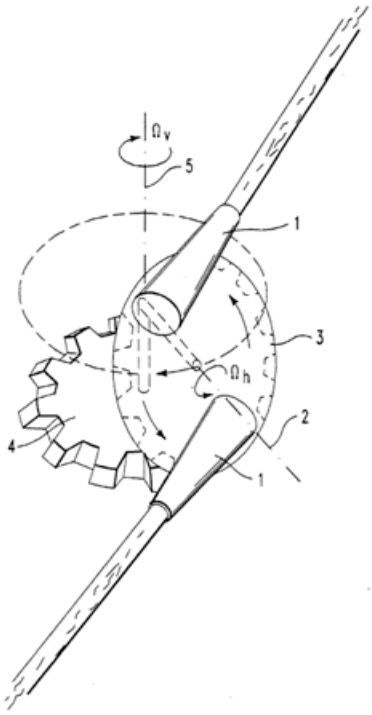
B05B 3/066

{the movement of the outlet elements being a combination of two movements, one being rotational}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates nozzles (1), whose movement is a combination of two rotations, i.e. a combination of two movements, at least one being rotational, the rotations being driven by reaction of water discharged by nozzles (1) on the respective nozzle body.

B05B 3/08

in association with stationary outlet or deflecting elements

Definition statement

This place covers:

Illustrative examples of subject matter classified in this place:

1.

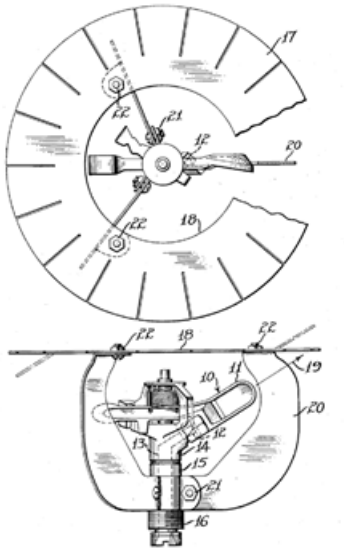
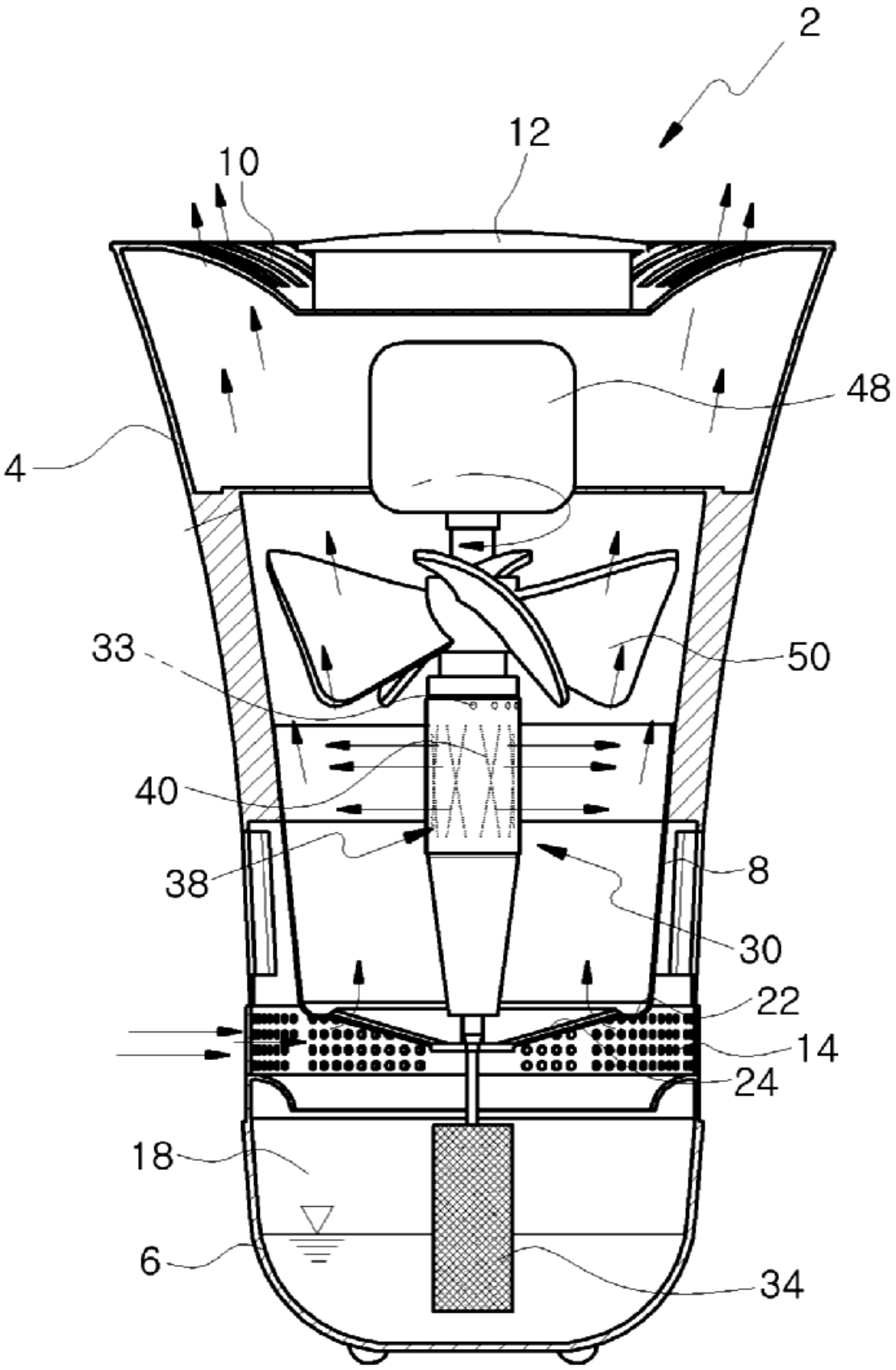
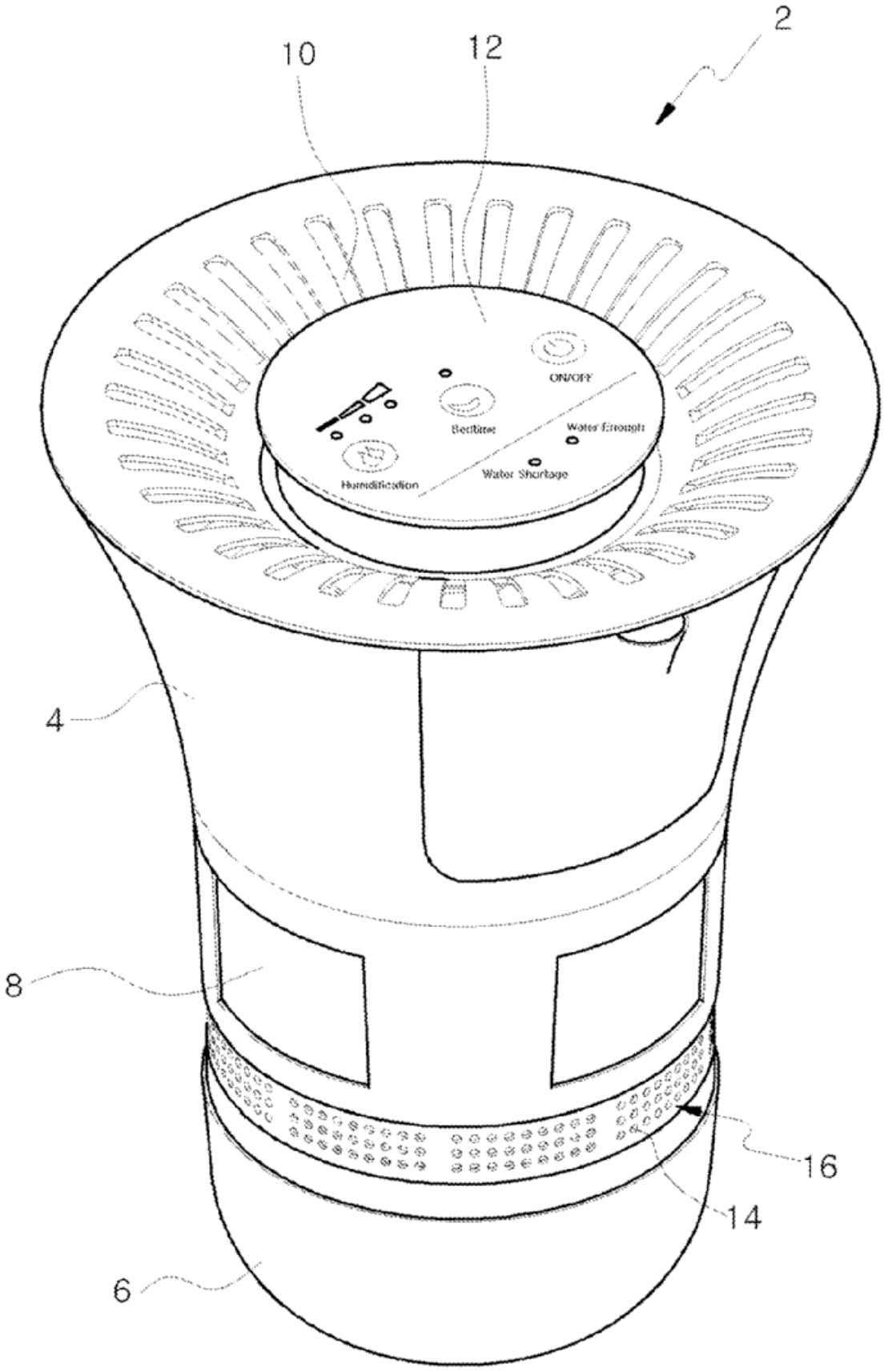


Figure 1 illustrates a rotary sprinkler (10) in association with a stationary deflecting element (18), wherein individual segments (17) on the annular disc (18) may be deformed to restrict the range of the stream of water in any desired direction.

2a.



2b.


2
10
12
ON/OFF
Bedtime
Water Enough
Humidification
Water Shortage
4
8
16
14
6

Figures 2a and 2b illustrate a rotary outlet element (30) and rotary deflecting elements (50), both in association with stationary outlets (10).

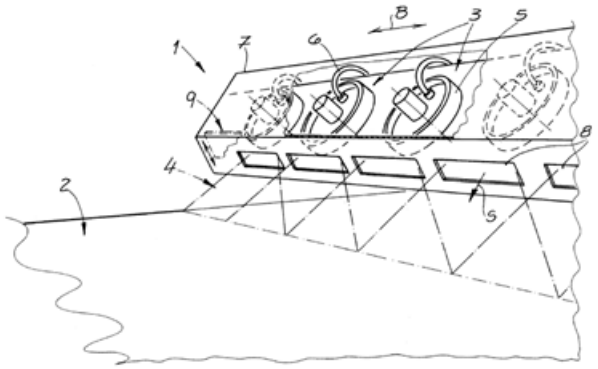
B05B 3/082

{the spraying being effected by centrifugal forces}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a rotary spraying disk (5) as a deflecting element, in association with stationary outlets (8).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Air-humidification by forming water dispersions in the air using rotating elements	F24F 6/16

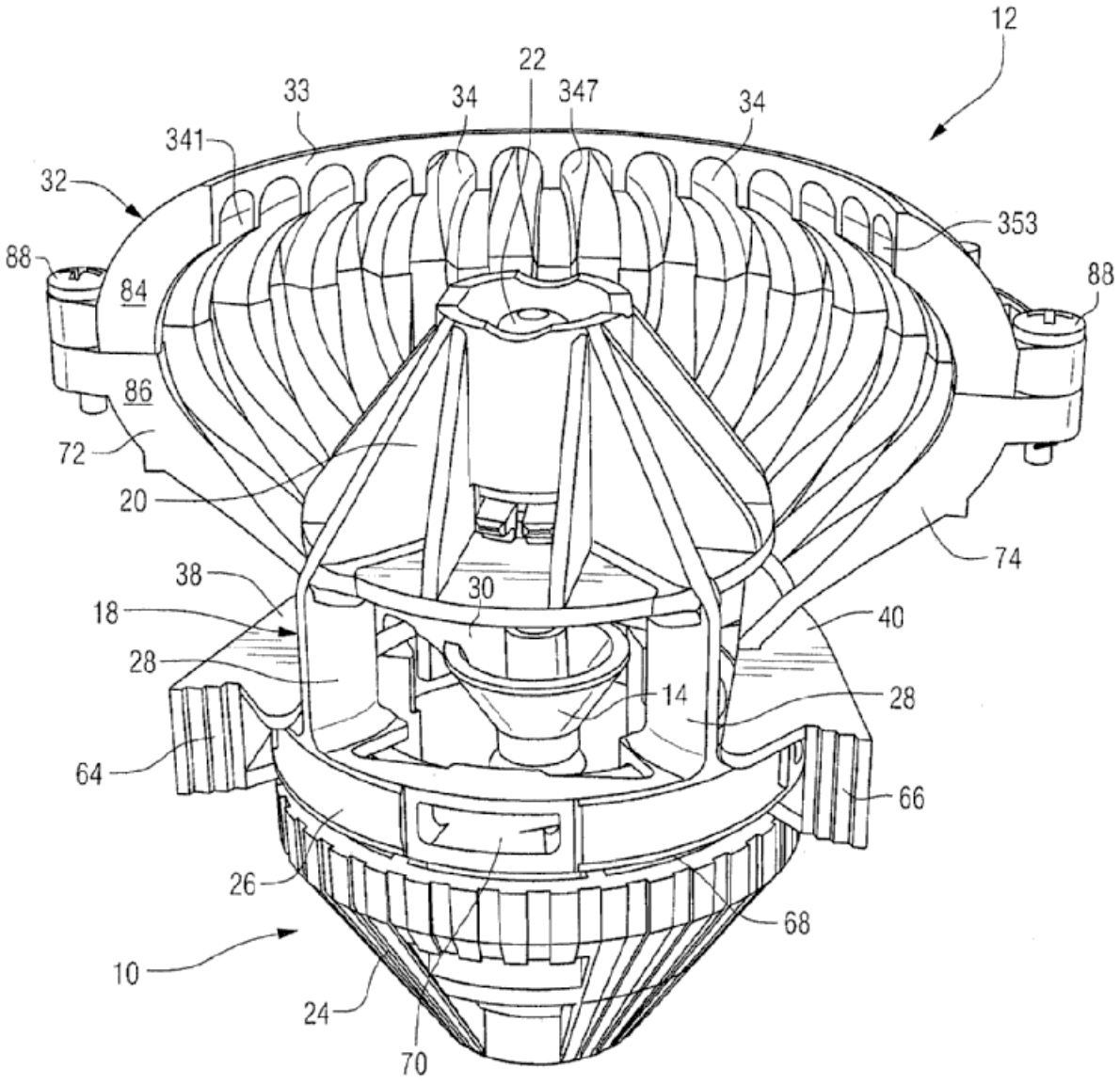
B05B 3/085

{in association with sectorial deflectors}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a stationary fixed deflector (12) in association with a rotary sprinkler (10), wherein a deflector (12) limits distribution of a stream emitted by the sprinkler (10) to less than the 360-degree circle pattern that would otherwise be irrigated by the stream.

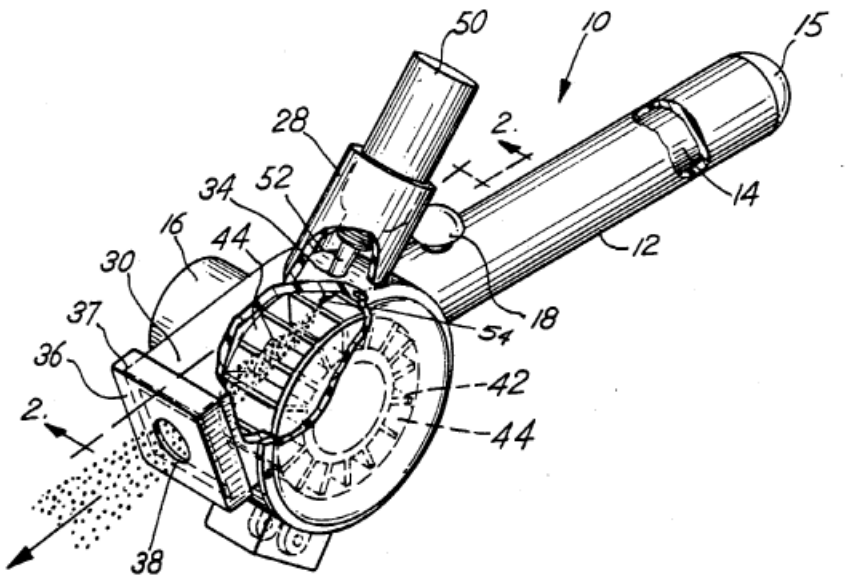
B05B 3/087

{Spray guns comprising this arrangement}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates an air brush (10), wherein spraying is effected by centrifugal forces from rotary deflecting elements (42), in association with sectorial stationary deflecting element (30).

B05B 3/10

discharging over substantially the whole periphery of the rotating member {([B05B 3/082](#) takes precedence)}

References

Limiting references

This place does not cover:

Spraying or sprinkling apparatus with rotating elements in association with stationary outlet or deflecting elements, the spraying being effected by centrifugal forces	B05B 3/082

Informative references

Attention is drawn to the following places, which may be of interest for search:

Making metallic powder or suspensions thereof by spraying using centrifugal force	B22F 9/10

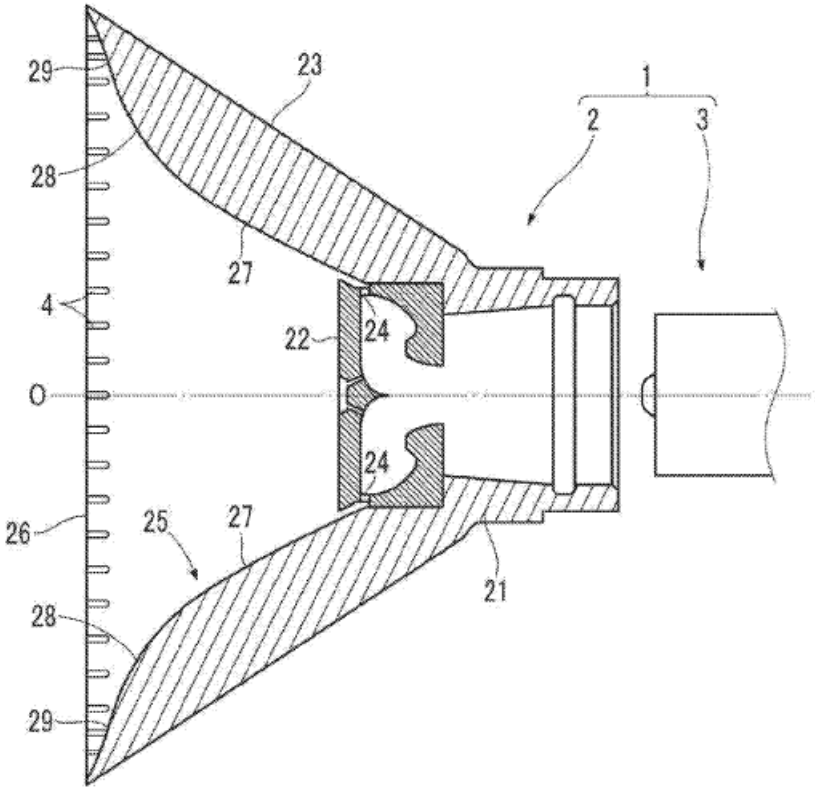
B05B 3/1014

{with a spraying edge, e.g. like a cup or a bell}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a cup-shaped spray head (23) being part of a rotary nozzle.

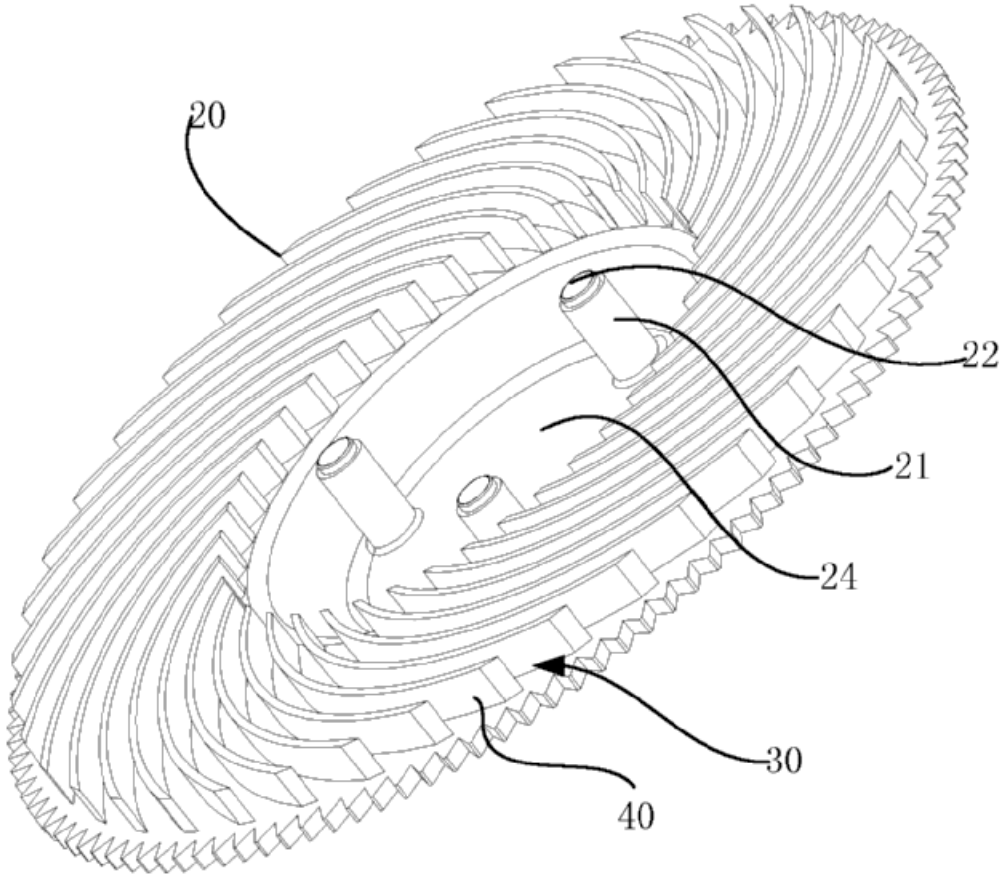
B05B 3/1021

{with individual passages at its periphery}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a rotary spraying plate provided with individual passages (30).

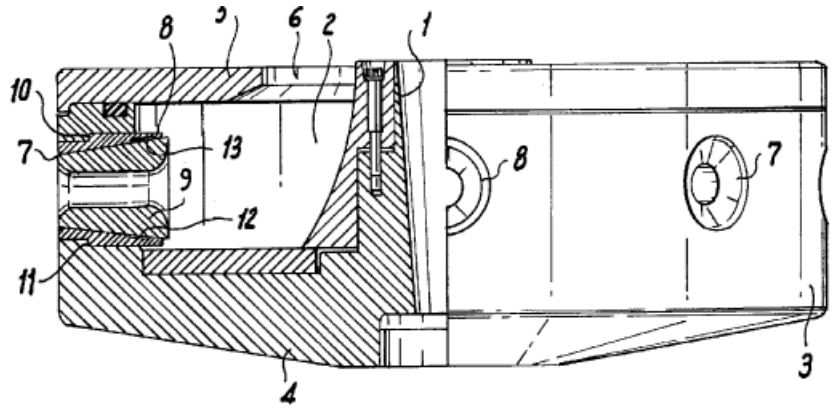
B05B 3/1028

{the passages comprising an insert}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates an insert (7) that forms an individual passage at the periphery of the rotating member (4).

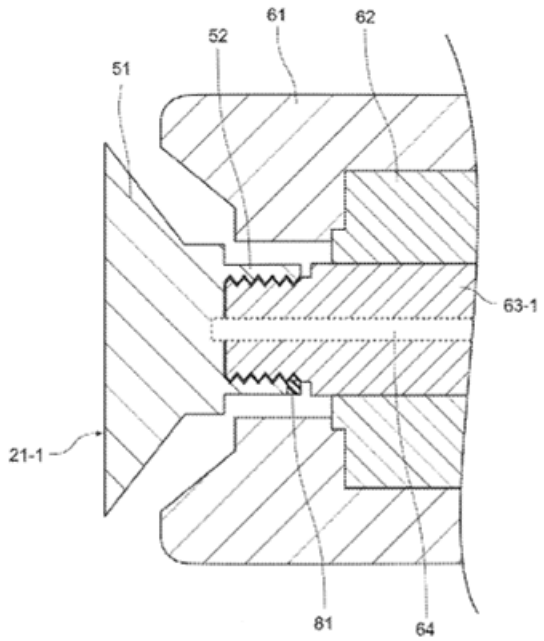
B05B 3/1042

{Means for connecting, e.g. reversibly, the rotating spray member to its driving shaft}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates means for connecting a rotating spray head (51) to its driving shaft (64) being reversible (a threaded connection allows the head to be screwed on and off).

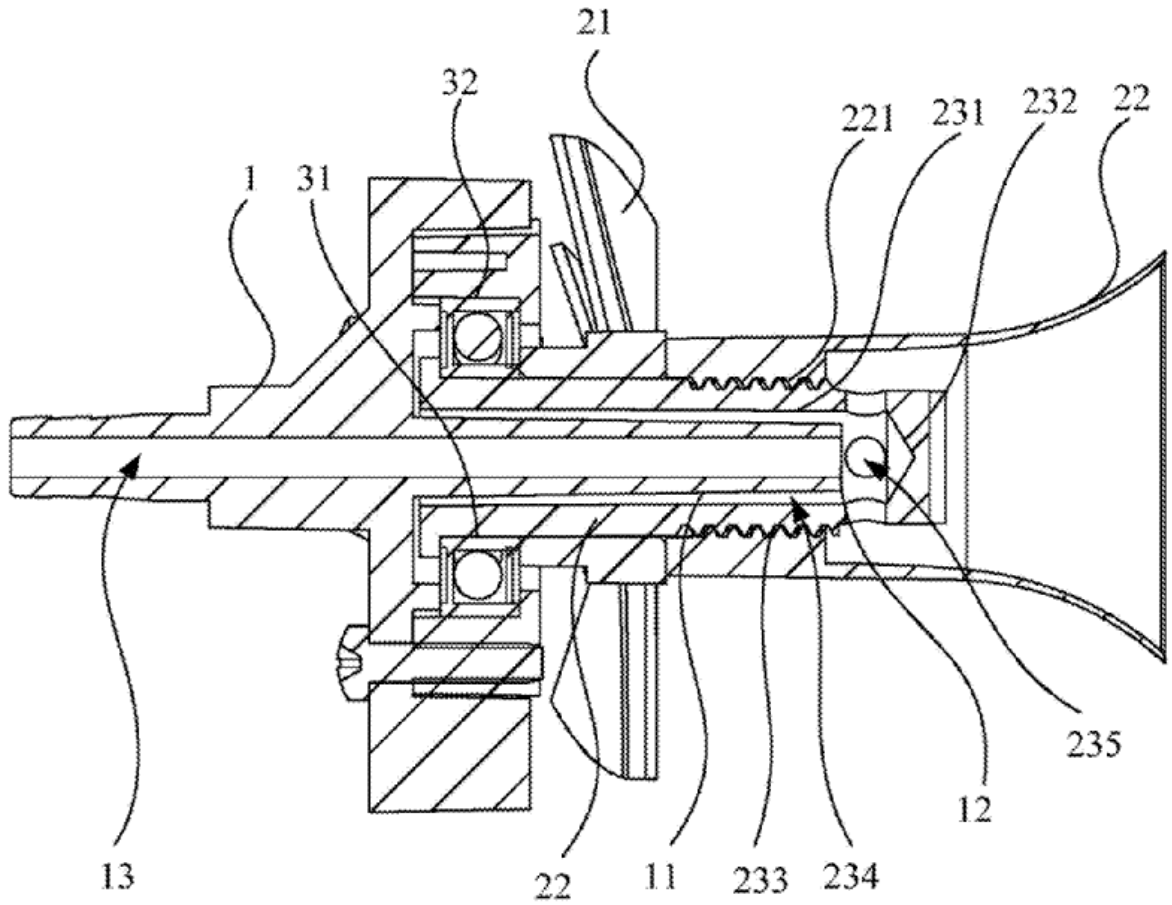
B05B 3/105

{Fan or ventilator arrangements therefor}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a rotary cup-shaped spray head (22) associated with fan blades (21).

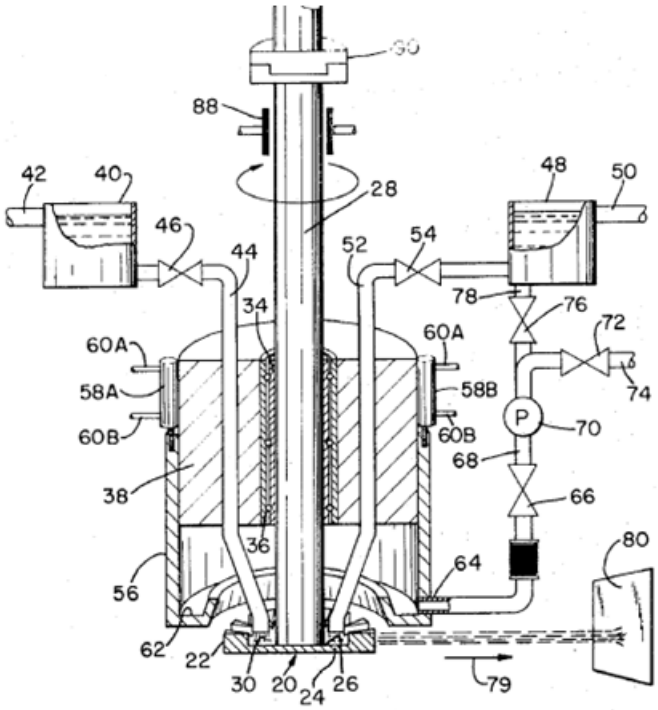
B05B 3/1057

{with at least two outlets, other than gas and cleaning fluid outlets, for discharging, selectively or not, different or identical liquids or other fluent materials on the rotating element}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates two outlets (44) and (52), which supply two liquids (42) and (50) to a rotating element (20).

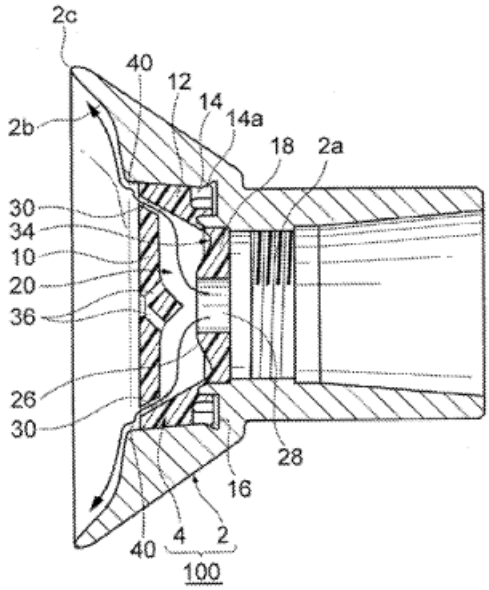
B05B 3/1064

{the liquid or other fluent material to be sprayed being axially supplied to the rotating member through a hollow rotating shaft}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a fluid sprayed as axially supplied to rotating member (2) from a hollow rotating shaft (tube that affixes to 2a).

B05B 3/1078

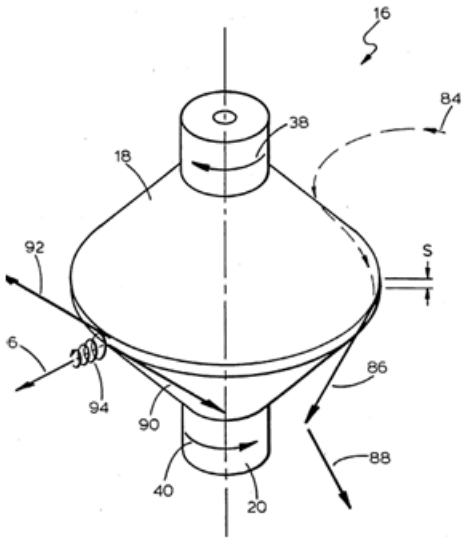
{the rotating members rotating in opposite directions}

Definition statement

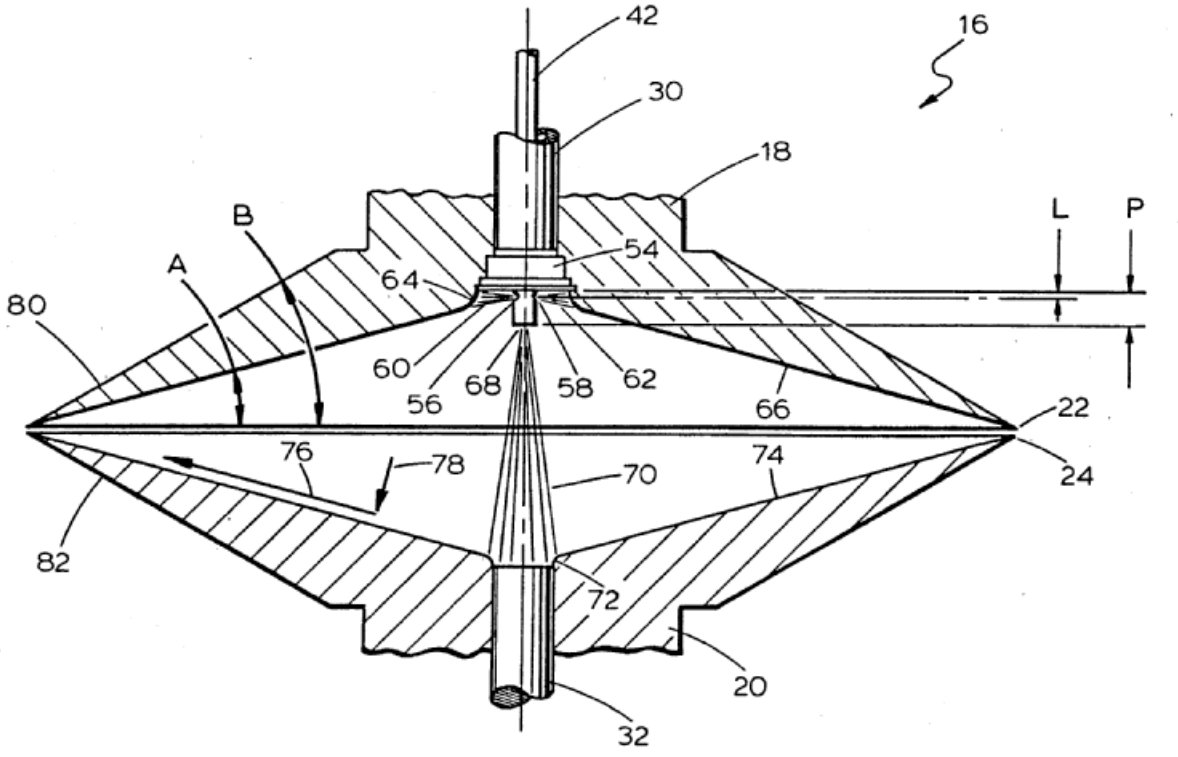
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate two rotating members (20) and (38) that rotate in opposite directions.

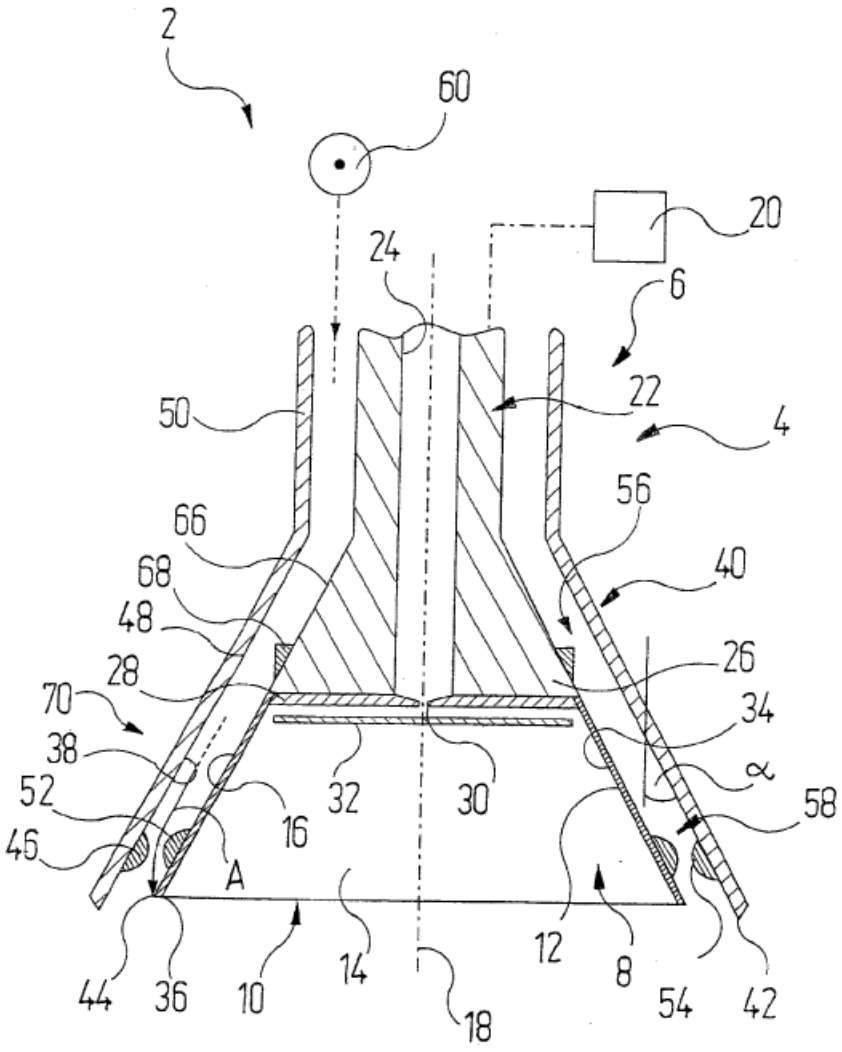
B05B 3/1092

{Means for supplying shaping gas}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a gas being supplied from a compressed air source (60) out of a sleeve (40) to shape the fluid being discharged from a rotary bell-shaped disc (8).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Means for supplying shaping gas associated with rotary outlet or deflecting elements of apparatus spraying liquids or other fluent materials by electric or electrostatic means	B05B 5/0426
Means for supplying shaping gas associated with spraying apparatuses without any moving outlet or deflecting elements	B05B 7/0815

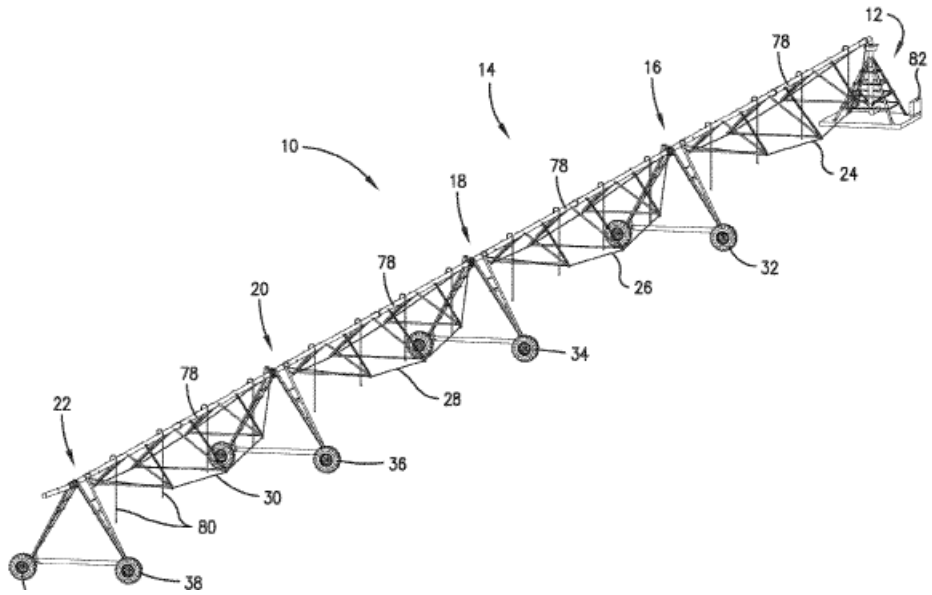
B05B 3/12

with spray booms or the like rotating around an axis by means independent of the liquid or other fluent material discharged

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a spray boom (10, system) rotating about axis (12) by means independent of the liquid or material discharged, wheels (32, 34, 36, 38) having integrated motors rotating them independently from the fluid in the system.

References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Watering arrangements movable around a pivot centre for agricultural watering of gardens, fields, sports grounds or the like	A01G 25/092
Special adaptations or arrangements of liquid-spraying apparatus for agricultural uses, e.g. spray booms	A01M 7/00

B05B 3/14

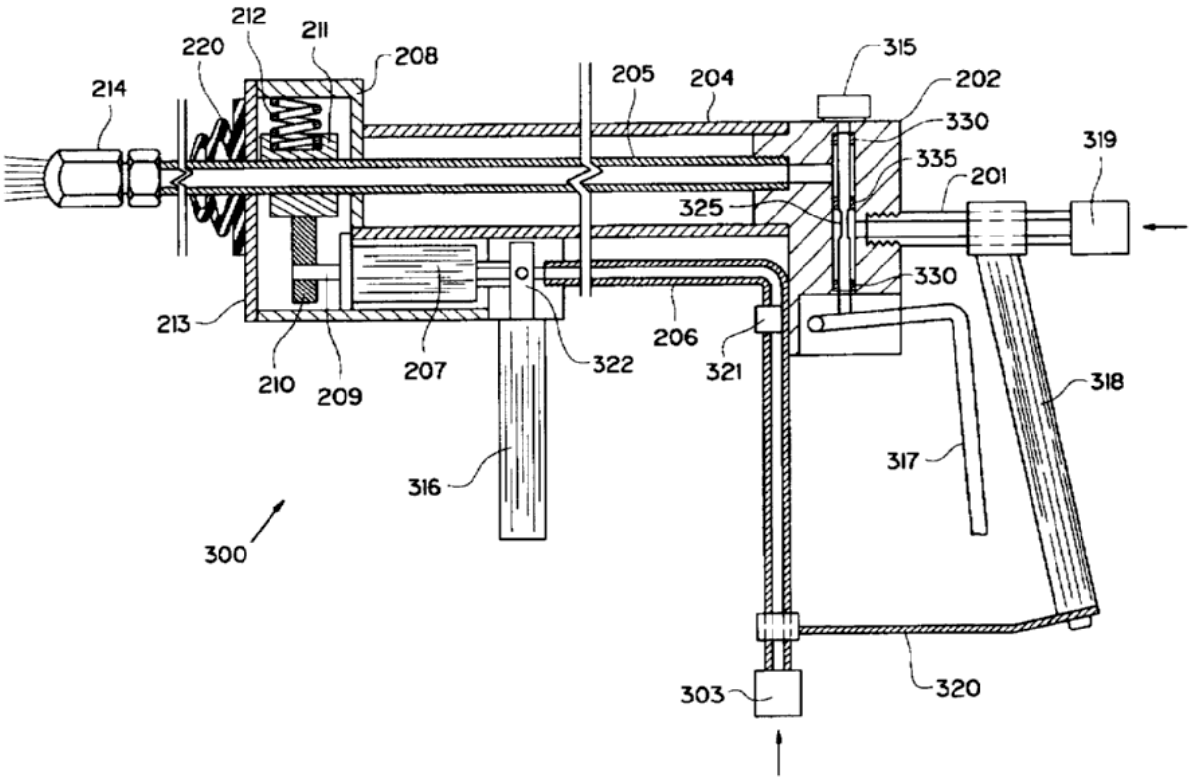
with oscillating elements; with intermittent operation

Definition statement

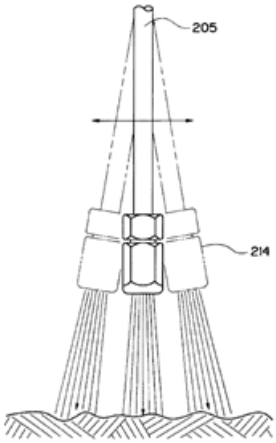
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate an oscillating nozzle (214), the oscillation being driven by a motor (207).

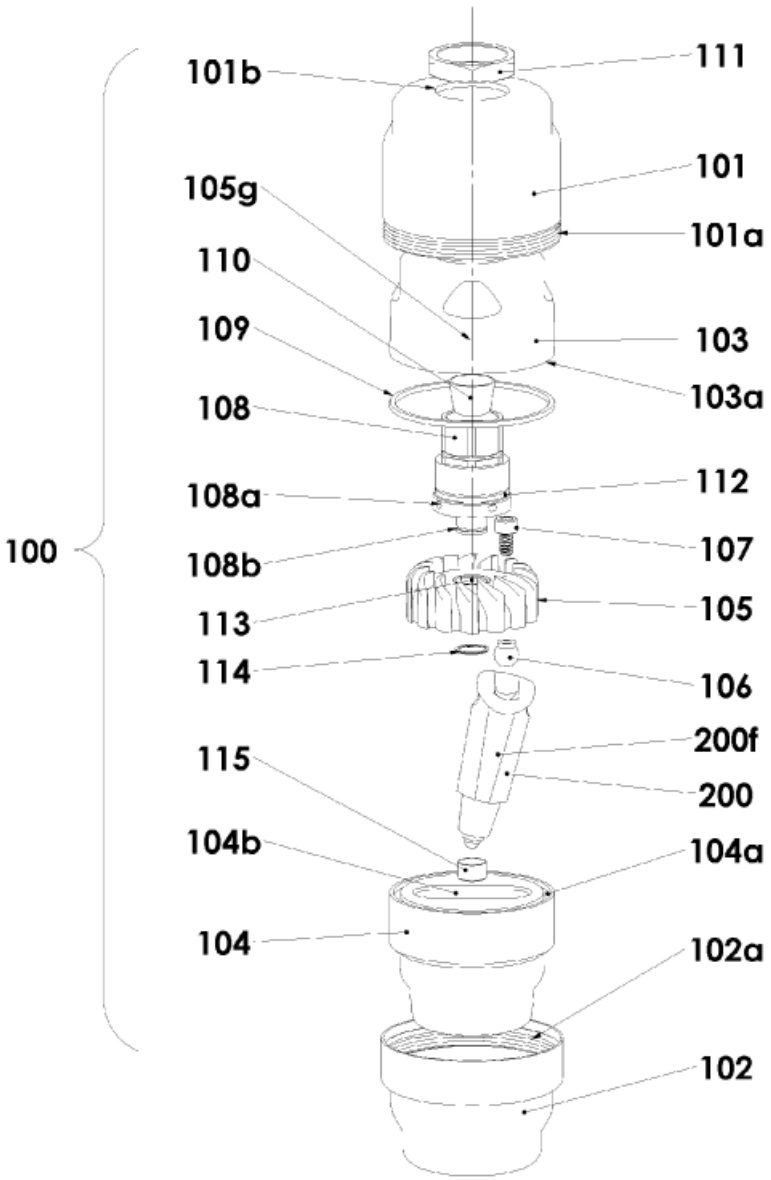
B05B 3/16

driven or controlled by the liquid or other fluent material discharged, e.g. the liquid actuating a motor before passing to the outlet {(comprising liquid driven rotors wherein the rotation of the outlet element is reversible B05B 3/0432; the outlet elements being rotated by a deflecting element successively moved into the discharged jet by the action of a biasing means and out of the discharged jet by the discharged jet with the rotation of the outlet elements being reversible B05B 3/0461)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a fluid driving rotation of turbine (105) that actuates the movement of rocker assembly (200) of nozzle assembly (100), wherein rotation of the turbine (105) is converted into an oscillatory, back-and-forth linear motion of the rocker assembly (200).

References

Limiting references

This place does not cover:

Spraying or sprinkling apparatus with rotating outlet elements, comprising a liquid driven rotor wherein rotation of an outlet element is reversible	B05B 3/0432
Spraying or sprinkling apparatus with rotating outlet elements, which are rotated by a deflecting element being successively moved into the discharged jet by the action of a biasing means and out of the discharged jet by the discharged jet with the rotation of the outlet elements being reversible	B05B 3/0461

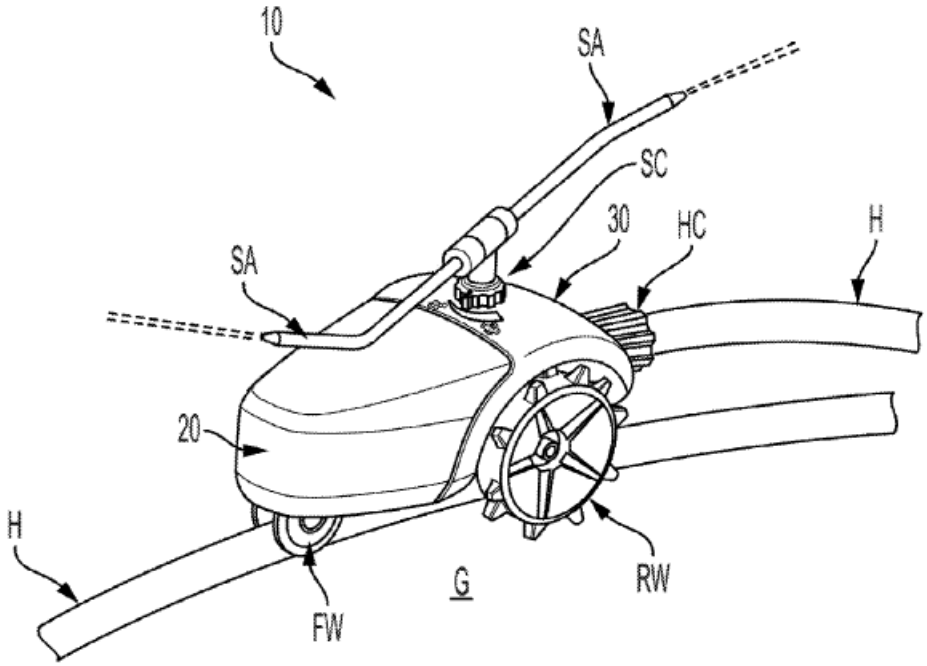
B05B 3/18

with elements moving in a straight line, e.g. along a track; Mobile sprinklers {(watering arrangements making use of movable installations A01G 25/09)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a mobile sprinkler (10) moving along a track (H).

References

Limiting references

This place does not cover:

Watering arrangements making use of movable installations on wheels or the like	A01G 25/09

B05B 7/2402

{Apparatus to be carried on or by a person, e.g. by hand; Apparatus comprising containers fixed to the discharge device (B05B 7/0012 takes precedence)}

Relationships with other classification places

Apparatus of the B05B 7/00 type which are to be carried on or by a person, e.g. by hand, and which have a container are classified in B05B 7/2405+, B05B 7/244+.

B05B 11/00 takes precedence.

Apparatus of the B05B 9/00 type which are to be carried on or by a person, e.g. by hand, and have a container being put under pressure are classified in B05B 9/0805+.

B05B 9/08

Apparatus to be carried on or by a person, e.g. of knapsack type ({B05B 9/0426, B05B 11/00 take precedence } ; details or components, e.g. casings, bodies of portable power-driven tools not particularly related to the operation performed B25F 5/00)

Relationships with other classification places

Apparatus of the B05B 9/00 type which are to be carried on or by a person, e.g. by hand, and have a container being put under pressure are classified in B05B 9/0805+.

B05B 11/00 takes precedence.

Apparatus of the B05B 7/00 type which are to be carried on or by a person, e.g. by hand, and which have a container are classified in B05B 7/2405+, B05B 7/244+.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed	B25F 5/00

B05B 11/00

Single-unit hand-held apparatus in which flow of contents is produced by the muscular force of the operator at the moment of use

Definition statement

This place covers:

Single-unit hand-held apparatus comprising a container and a dispensing nozzle attached thereto, in which flow of contents is produced by the muscular force of the operator at the moment of use.

Relationships with other classification places

The expression "Single-unit hand-held apparatus in which flow of contents is produced by the muscular force of the operator at the moment of use" is very important to properly define the border line with other areas of B05B as well as with other technical fields, e.g. B65D, A47K, F04B.

Single-unit hand-held apparatus in which there exists a possibility to accumulate permanently a certain pressure on the material, e.g. liquid, and wherein this pressure is used to discharge the material through the outlet are not classified in B05B 11/00 and sub-groups, but in B05B 9/0805 and subgroups or B05B 7/2402 and subgroups.

In apparatus classified in B05B 11/109 and subgroups, energy can be stored, e.g. in the form of a compressed spring. However, the stored energy does not generate permanent pressure on the material for discharging the latter. Only when the spring is released is the material pressurized in the pump chamber.

In apparatus classified in B05B 11/0041 and sub-groups, reservoirs containing the material may be permanently pressurized, e.g. by a follower piston pushed by a spring. However, this pressure is not used to discharge the material but only to feed the latter to a discharge device, e.g. a pump.

Aerosol containers are classified in B65D 83/14 and subgroups.

Apparatus of the B05B 7/00 type which are to be carried on or by a person, e.g. by hand, and which have a container are classified in B05B 7/2405, B05B 7/244 as well as their subgroups.

Apparatus of the B05B 9/00 type which are to be carried on or by a person, e.g. by hand, and have a container are classified in B05B 9/0805 and subgroups.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Spraying apparatus for discharge of liquids or other fluent materials from two or more sources, e.g. of liquid and air, of powder and gas	B05B 7/00
Spraying apparatus for discharge of liquids or other fluent material, without essentially mixing with gas or vapour	B05B 9/00

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Content	liquid or other fluid material.
Pump	A device comprising a chamber into which the material is first sucked from the container through an inlet, then delivered out of the chamber, e.g. sprayed, through an outlet. Inlet and outlet can be equipped with valves.
Lift valve	A valve as defined in main group F16K 1/00, i.e. a cut-off device with closure members having at least a component of their opening and closing motion perpendicular to the closing faces.
Gate valve or sliding valve	A valve as defined in main group F16K 3/00, i.e. cut-off device with closing members having a sliding movement along the seat for opening and closing.

B05B 11/02

Membranes or pistons acting on the contents inside the container, e.g. follower pistons

Definition statement

This place covers:

Membranes or pistons which are in contact with the contents inside the container.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Medical syringes, e.g. enemata	A61M 3/00
Syringes for bringing media into the body in a subcutaneous, intra-vascular or intramuscular way	A61M 5/178

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Follower	an element, e.g. piston, that is in contact with the material to be dispensed throughout the dispensing process.

B05B 11/04

Deformable containers producing the flow, e.g. squeeze bottles

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Containers adapted to be temporarily deformed by external pressure to expel contents	B65D 1/32

B05B 11/10

Pump arrangements for transferring the contents from the container to a pump chamber by a sucking effect and forcing the contents out through the dispensing nozzle

Definition statement

This place covers:

Pumps drawing the contents from the container into a pump chamber inlet during a suction stroke and forcing the contents out of a pump chamber outlet into the dispensing nozzle during a dispensing stroke.

B05B 12/00

Arrangements for controlling delivery; Arrangements for controlling the spray area

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Controlling in general	G05

B05B 12/0022

{associated with means for restricting their movement}

Definition statement

This place covers:

Means to restrict, limit the actuation by the user by limiting the movement of the controlling means.

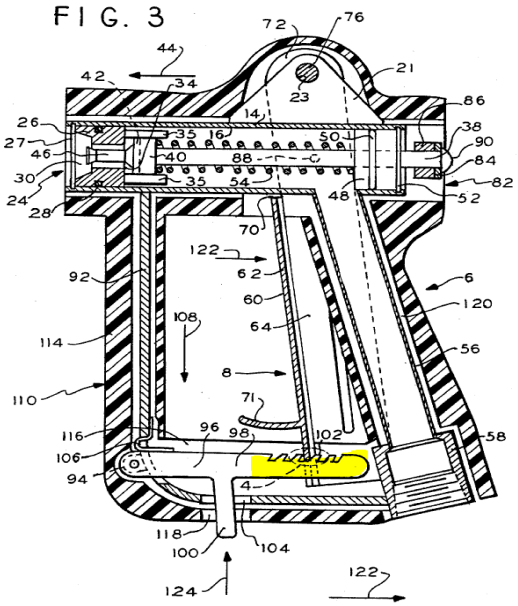
Such restricting means are:

- locking means, e.g. for locking the valve in the open or close position
- stop means

Biasing means such as springs are not considered as means for restricting the movement.

If there is only one locking or stopping position, classification is made in B05B 12/0024 and subgroup.

Example of a locking means, with several positions:



Example of a stopping means, with several positions:

Fig. 6

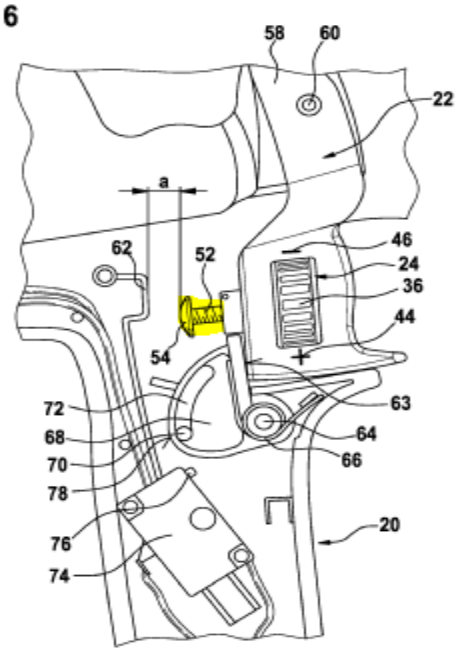
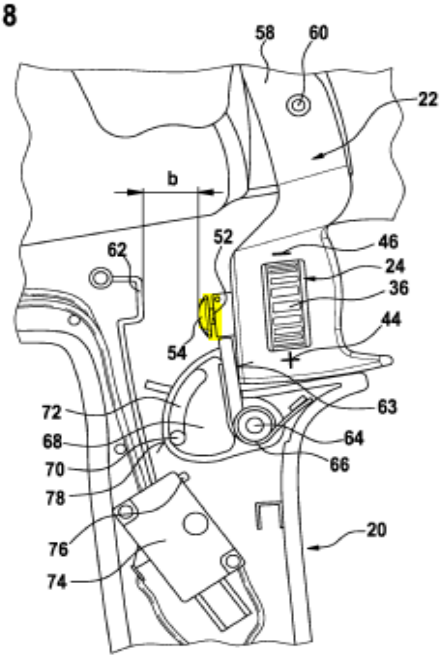


Fig. 8



B05B 12/085

{responsive to flow or pressure of liquid or other fluent material to be discharged (B05B 1/3006, B05B 1/323 take precedence; spray pistols designed to control volume of flow with the controlling means being fluid actuated B05B 7/1254)}

References

Limiting references

This place does not cover:

Nozzles, spray heads or other outlets designed to control volume of flow, the controlling element being actuated by the pressure of the fluid to be sprayed	B05B 1/3006
Nozzles, spray heads or other outlets designed to control volume of flow in which a valve member forms part of the outlet opening, the valve member being actuated by the pressure of the fluid to be sprayed	B05B 1/323
Spraying apparatus for discharge of liquids or other fluent materials from two or more sources, e.g. of liquid and air, of powder and gas	B05B 7/1254

Informative references

Attention is drawn to the following places, which may be of interest for search:

Control of flow in general	G05D 7/00
Control of fluid pressure in general	G05D 16/00

B05B 12/14

for supplying a selected one of a plurality of liquids or other fluent materials {or several in selected proportions} to a {spray apparatus, e.g. to a} single spray outlet

Relationships with other classification places

Apparatus for changing colours are classified in B05B 12/14 and subgroups.

B05B 12/18

using fluids, e.g. gas streams

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Blast of gas or vapour for spreading liquids already applied to a surface	B05C 11/06
Processes for applying liquids or other fluent materials to surfaces comprising directing or stopping the fluid to be coated with air	B05D 3/042

B05B 12/20

Masking elements, i.e. elements defining uncoated areas on an object to be coated

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Stencils	B05C 17/06
Use of means for protecting parts of a surface not to be coated in processes for applying liquids or other fluent materials to surfaces	B05D 1/32
Masking means used in electroplating	C25D 5/022

B05B 12/36

Side shields, i.e. shields extending in a direction substantially parallel to the spray jet

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Nozzles with integral means for shielding	B05B 1/28

B05B 13/00

Machines or plants for applying liquids or other fluent materials to surfaces of objects or other work by spraying, not covered by groups B05B 1/00 - B05B 11/00 (means for supplying or discharging liquid or other fluent material for this purpose, see the relevant one of groups B05B 1/00 - B05B 12/00; processes for applying liquids or other fluent materials to surfaces in general B05D)

References

Limiting references

This place does not cover:

Processes for applying liquids or other fluent materials to surfaces in general	B05D

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Watering arrangements making use of movable installations on wheels or the like	A01G 25/09

Special rules of classification

Reference B05D is non-limiting in group B05B 13/00. CPC will be updated or corrected once this inconsistency is resolved in IPC.

Group B05B 13/00 is used to classify subject matter that is not fully covered by groups B05B 1/00 - B05B 11/00, so group B05B 13/00 can be used in addition to groups B05B 1/00 - B05B 11/00 when subject matter for B05B 1/00 - B05B 11/00 is also to be classified. For example, a means for supporting work can be classified in subgroup B05B 13/02 when it is used with a nozzle not requiring classification in group B05B 1/00, or a means for supporting work can be classified in subgroup B05B 13/02, in addition to classifying the nozzle used therewith in group B05B 1/00.

Means for supplying or discharging of liquid or other fluent material for applying liquids or other fluent materials to surfaces of objects or other work by spraying are covered by one of groups B05B 1/00 - B05B 12/00.

B05B 13/002

{Machines or plants for applying coating liquids or other fluent materials by inkjet}

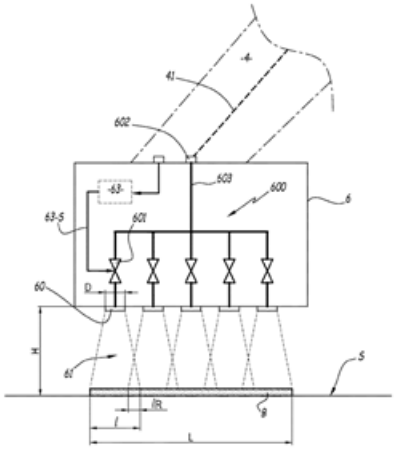
Definition statement

This place covers:

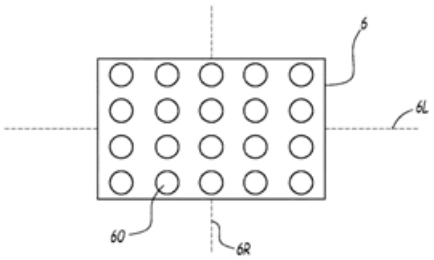
Machines or plants for inkjet coating onto work surfaces, e.g. by using nozzle heads provided with numerous closely spaced outlets. The resulting coating formed is a plain coating layer that is not patterned when applied onto the work surfaces.

Illustrative examples of subject matter classified in this place:

1a.



1b.



Figures 1a and 1b illustrate an inkjet coating head (6) provided with several spraying nozzles (60) aligned along one or several columns, or along one or more of several rows.

2.

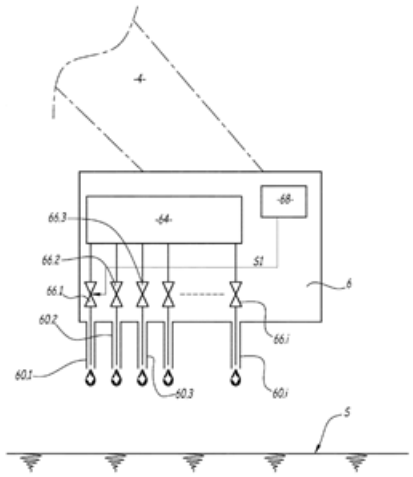


Figure 2 illustrates an inkjet coating head (6) provided with several nozzles (60.1, 60.2, 60.3 up to 60.i), each of the nozzles being configured to coat a surface (S) dropwise.

Relationships with other classification places

Subclass B41J and group B41J 3/4073 cover the projection of ink droplets for printing to form a meaningful pattern. Group B41J 11/0015 covers uniform or plain coating of copy material, e.g. paper, either before or after printing.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Selective printing on three-dimensional objects not being in sheet or web form	B41J 3/4073

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "inkjet printing", "selective printing", "incremental printing", "drop on demand [DOD] printing", "non-impact printing [NPI]", "direct printing" and "drop discharge"

B05B 13/0431

{with spray heads moved by robots or articulated arms, e.g. for applying liquid or other fluent material to three-dimensional [3D] surfaces}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Manipulators for painting or coating	B25J 11/0075

B05B 13/0447

{Installation or apparatus for applying liquid or other fluent material to conveyed separate articles (B05B 13/0442 takes precedence)}

References

Limiting references

This place does not cover:

Installation or apparatus for applying liquid or other fluent material to separate articles rotated during spraying operations	B05B 13/0442

Informative references

Attention is drawn to the following places, which may be of interest for search:

Programme-controlled manipulators cooperating with conveyor means	B25J 9/0093

B05B 14/20

from moving belts, e.g. filtering belts or conveying belts

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Cleaning devices for conveyors	B65G 45/10

B05B 14/30

comprising enclosures close to, or in contact with, the object to be sprayed and surrounding or confining the discharged spray or jet but not the object to be sprayed

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Movable or portable abrasive blasting machine with suction means for the abrasive and the waste material	B24C 3/065

B05B 14/462

and separating the excess material from the washing liquid, e.g. for recovery

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Paint detackifiers or coagulants used for the treatment of excess spraying materials	C09D 7/71

B05B 15/00

Details of spraying plant or spraying apparatus not otherwise provided for; Accessories

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Accessories applicable to other methods of applying liquids or other fluent materials to surfaces	B05C

B05B 15/30

Dip tubes

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Dip tubes for aerosol containers	B65D 83/32

B05B 15/50

Arrangements for cleaning; Arrangements for preventing deposits, drying-out or blockage; Arrangements for detecting improper discharge caused by the presence of foreign matter

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for preventing or detecting clogging or moistening of ink-jet nozzles	B41J 2/165
Detecting the presence of fluid at a leakage point	G01M 3/04

B05B 15/534

by reversing the nozzle relative to the supply conduit

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Aerosol containers comprising alternative flow directions outlets	B65D 83/7532

B05B 15/555

discharged by cleaning nozzles

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Cleaning by the force of jets or sprays in general	B08B 3/02

B05B 15/65

Mounting arrangements for fluid connection of the spraying apparatus or its outlets to flow conduits

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Joints in general	F16L 13/00 -F16L 37/00

B05B 15/652

whereby the jet can be oriented

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Single-unit hand-held apparatus in which flow of contents is produced by the muscular force of the operator at the moment of use provided with a movable dispensing tube	B05B 11/0091

B05B 15/70

Arrangements for moving spray heads automatically to or from the working position

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Nozzles for cleaning vehicle windscreens or optical devices materials to surfaces	B60S 1/52

B05B 16/00

Spray booths (arrangements for collecting, re-using or eliminating excess spraying material in spray booths B05B 14/40)

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Enclosures, e.g. booths, for applying liquids or other fluent materials to surfaces	B05C 15/00