

Search history

Search 1: SFT=(wash* and nozzle and vortex) (Results 4563)

Search 2: SFT=(wash* and nozzle and vortex) and IC=(b05b) (Results 384)

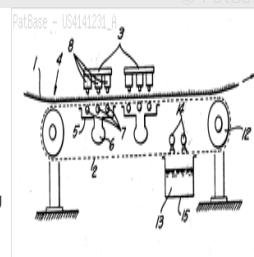
1) Family number: 30341109 (US4141231A)

MACHINE FOR APPLYING PATTERNS TO A SUBSTRATE

Abstract: Source: US4141231A A substrate to be patterned, such as a textile web, is moved past an array of nozzles with discharge orifices closely spaced from its surface, the substrate being firmly backed at locations confronting the nozzles by being drawn against a supporting conveyor or by being led around rollers. The nozzles are electromagnetically operated by needle valves, the valve needles being carried by membranes under substantially balanced pressures from the printing liquor and from a fluid such as compressed air. The electromagnetic coils are energized by a generator of short current pulses separated by a low holding current, the generator including two complementary power transistors in series with a coil winding. A dyestuff applicator carrying one or more of such nozzles may be transversely displaceable across the substrate, under the control of a programmer, between intermittent advances of the substrate in its longitudinal direction.

Probable Assignee: ZIMMER PETER AG

Earliest Publication Date: 19761116



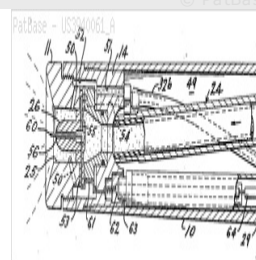
2) Family number: 1182827 (US3940061A)

ELECTROSTATIC SPRAY GUN FOR POWDER COATING MATERIAL

Abstract: Source: US3940061A The invention relates to an electrostatic spray gun for the deposition of powdered coating material characterized by an improved deposition efficiency and provided with a multi-stage, trigger operated control that permits spraying at a plurality of conditions that may be preselected by the operator. An axially disposed needle charging electrode is used and an axial air flow passage surrounds the same to reduce any troublesome accumulation of powder on the needle under all spraying conditions.

Probable Assignee: DEVILBISS CO A CORP OF DE

Earliest Publication Date: 19751231



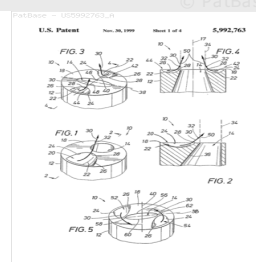
3) Family number: 11884229 (US5992763A)

NOZZLE AND METHOD FOR ENHANCING FLUID ENTRAINMENT

Abstract: Source: US5992763A A nozzle 10 and method for enhancing entrainment of a fluid near a face 18 of the nozzle 10, where the nozzle 10 includes a nozzle body 18 defining a nozzle opening 14 for ejecting a fluid therethrough. At least one indentation 20 is formed in the nozzle face 18 adjacent to, but spaced from, the nozzle opening 14 and includes a contoured surface 22 defined by first and second side surfaces 24 and 26 that converge toward the nozzle opening 14 to form a leading edge 28 closest to the nozzle opening 14. The imaginary extension 30 of at least a portion of the contoured surface 22 converges at a focal point 32 distal the nozzle face 18, defining an entrainment path. The focal point 32 is closer to an imaginary projection 34 of the nozzle opening 14, extending outwardly from and normal to the nozzle face 18, than the leading edge 20 is to the nozzle opening 14. Thus, fluid near the nozzle face in the indentation 20 is entrained into the entrainment path 30 and fluid ejected through the nozzle opening 14.

Probable Assignee: VORTEX GROUP INC

Earliest Publication Date: 19991130



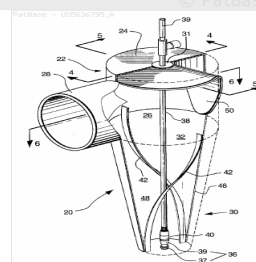
4) Family number: 13096947 (US5636795A)

CYCLONIC SPRAY NOZZLE

Abstract: Source: US5636795A A cyclonic spray nozzle having a substantially cylindrical inlet chamber with a closed top end, an open bottom end and a tangential air inlet arranged adjacent to the closed top end. A truncated Cone-shaped discharge chamber having an open top end and an open bottom end of smaller diameter than the open top end, is secured to said open bottom end of said inlet chamber in axial, fluid communicating register therewith. A fluid injector nozzle is positioned within the discharge chamber in operative spraying relation to said open end of said discharge chamber. The nozzle is useful in spraying an axially directed mist of fluid over a relatively long distance, while containing radial overspray.

Probable Assignee: FIRST PIONEER IND INC

Earliest Publication Date: 19970610



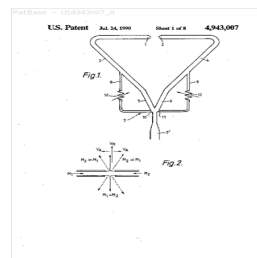
5) Family number: 15199410 (US4943007A)

SPRAY GENERATORS

Abstract: Source: US4943007A A spray generator for producing a spray of liquid droplets of a narrow size spectrum in which a substantially uniform cyclic disturbance is imposed on fluid energing at a nozzle. Such a disturbance can be produced by a fluidic bistable oscillator or by allowing the fluid to flow across a bluff body in the flow path. An opposed jet arrangement can be located within the vortex chamber of a fluidic diode and the liquid spray produced can meet swirling gas introduced at tangential inlets to the chamber.

Probable Assignee: ERG AIR POLLUTION CONTROL LTD

Earliest Publication Date: 19890906



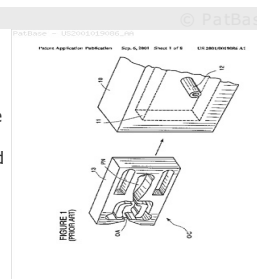
6) Family number: 15412347 (US2001019086A)

TWO-LEVEL NOZZLES WITH INTEGRATED OR BUILT-IN FILTERS AND METHOD

Abstract: Source: US2001019086A A molded fluidic device having a power nozzle with a width W and a coupling passage coupling a source of fluid to the power nozzle. The coupling passage is formed on one chip or insert surface and has a planar enlargement and a plurality of posts spaced across the enlargement, the spacing S between each post being less than the width of the power nozzle with the sum of spacing S being greater than the width W. A liquid spray nozzle is formed on an opposing chip surface and connected to the coupling passage downstream of the posts.

Probable Assignee: DLHBOWLES INC

Earliest Publication Date: 20000427



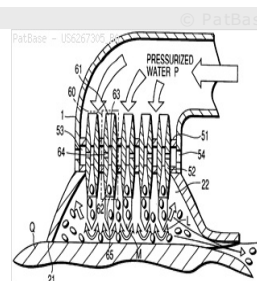
7) Family number: 15559185 (US6267305B)

SHOWER HEAD

Abstract: Source: US6267305B A shower head comprises a jet nozzle for jetting pressurized water supplied, a shower main body having ejector mechanisms consisting of the jet nozzle and an air-liquid mixing tube provided via an air suction member, a discharge outlet of the air-liquid mixing tube opening to a shower discharge member, and an annular projecting member projecting from the shower discharge member so as to surround the discharge outlet, wherein an air absorption hole of the air absorption member is made in an outer side section of the annular projecting member.

Probable Assignee: EHARA HIROYUKI

Earliest Publication Date: 20010515



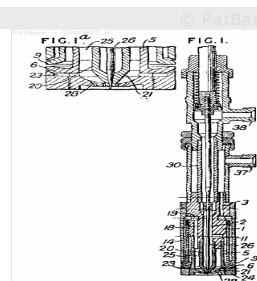
8) Family number: 19850023 (GB409822A)

IMPROVEMENTS IN OR RELATING TO SPRAYING DEVICES

Abstract: Source: GB409822A 35564. [Class 69 (iii).] A sprayer for lacquer and c., more particularly for coating the insides of boxes comprises an axial nozzle 21, an annular nozzle, and means such as a needle valve 26 to close the axial nozzle independently of the annular nozzle so that the bottom of a can may be sprayed as well as the sides. Atomization is effected by compressed air delivered through orifices 23, 28 which converge to meet immediately in front of the annular and axial orifices respectively. The apparatus comprises a central tubular body 1 having a central duct, in which is screwed the axial nozzle 21, and longitudinal passages 18 leading to a chamber 25 formed between the member 20 and a sleeve 5 having an outwardly directed flange 6. On the upper part of the body 1 is screwed a second sleeve having an outwardly directed flange 9 between which and the flange 6 the annular nozzle is formed. Liquid is admitted by a passage 38 to a tube 30 and thence to the passage 2 and axial nozzle 21 and also by a branch 11 to the annular nozzle between the members 6, 9, the central nozzle being regulated by the needle valve 26. Compressed air is admitted by passages 37, 3, 18 to the chamber 25 through converging posts 28 to atomize liquid delivered by the axial nozzle and also by branches 19 to the space 14 from which it is delivered through converging annular passages to atomize liquid delivered through the annular nozzle.

Probable Assignee: METAL BOX CO LTD

Earliest Publication Date: 19340510



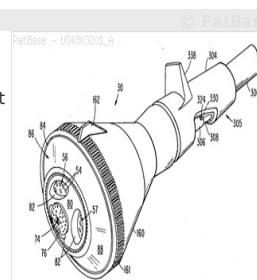
9) Family number: 2377110 (US4303201A)

SHOWERING SYSTEM

Abstract: Source: US4303201A A showering system includes a source of hot water and a showerhead fed from that source. To produce steam, there is a conduit that delivers water from the source to a showerhead and in which is defined an outlet. Disposed within the conduit is a selectively controlled diverter of the water arriving from the source, so as to direct it away from the showerhead and through the outlet in the form of a mist. The preferred showerhead is of a turbine-valve kind in which the turbine is driven by nozzles. Apertures in a flow director plate, governed by a control plate, feed nozzles predetermined to vary the force of water delivered from outlet orifices in correspondence with the number of the nozzles open to communicate with the inlet through the apertures.

Probable Assignee: TELEDYNE IND

Earliest Publication Date: 19810715



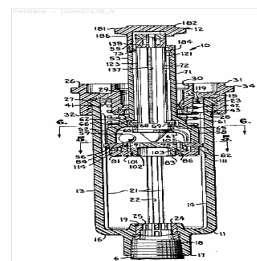
10) Family number: 2588284 (US4687139A)

BALL DRIVE SPRINKLER

Abstract: Source: US4687139A A rotary, pop-up sprinkler is provided which includes an in-ground container. A motor is reciprocally mounted in the container and includes a stator, a plate assembly mounted on the stator and a rotor rotatably received in the stator. The rotor includes a turret with a nozzle orifice. Hydraulic pressures on the rotor are balanced whereby anti-rotational drag is substantially reduced. A speed regulator is provided for maintaining a relatively constant rotational speed when the sprinkler is subjected to variances in hydraulic pressure.

Probable Assignee: IMP UNDERGROUND SPRINKLER CO

Earliest Publication Date: 19870818



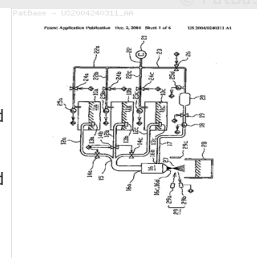
11) Family number: 28359376 (US2004240311A)

MIXER

Abstract: Source: US2004240311A A mixer capable of uniformly mixing a plurality of fluid materials without providing a mixing tank or an agitating vane. Different fluid raw materials are stored in raw material tanks, respectively. The raw materials are fed at a predetermined rate by variable restrictors so as to be supplied to a fluid supply hole of a nozzle. At this moment, the materials are not mixed. When the materials are discharged from a fluid discharge outlet, compressed air introduced from an air supply hole of the nozzle forms a high-speed vortex flow of the compressed air in front of the nozzle and the discharged raw materials are crushed into fine particles and mixed by this vortex flow, thereby obtaining a uniformly mixed material.

Probable Assignee: BIO MEDIA CO LTD

Earliest Publication Date: 20030304



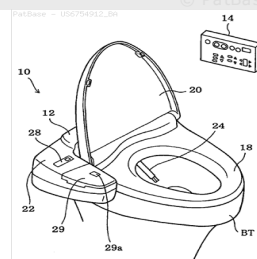
12) Family number: 29544510 (US6754912B)

HUMAN BODY CLEANER

Abstract: Source: US6754912B The present invention provides a novel water spray technique that extends a cleansing area in a two-dimensional manner without moving a nozzle. A nozzle head 170 has a water swirling chamber 171, which is located immediately below a nozzle opening 31 and connects with the nozzle opening 31 via a small-diameter connection pipe 163. The water swirling chamber 171 is formed as a hollow room having a tapered inner wall. A head flow path 34 is eccentrically connected to the water swirling chamber 171. Cleansing water flowed through the head flow path 34 into the water swirling chamber 171 swirls along the tapered inner wall of the water swirling chamber 171 as shown by the arrow SY and is sprayed from the nozzle opening 31 in a spiral (cone-shaped) form.

Probable Assignee: TOTO LTD

Earliest Publication Date: 19991021



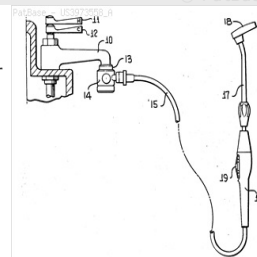
13) Family number: 29790888 (US3973558A)

SWEPT JET ORAL IRRIGATOR

Abstract: Source: US3973558A An improved oral irrigation technique is characterized by an oscillatory swept water jet issued to sweep back and forth at high frequencies across the user's gums and teeth. High frequency operation is achieved by oscillating the jet itself rather than the jet-issuing body. The high frequency sweeping jet effects faster cleaning action and more effective gum massage than prior art pulsed jet irrigators having lower effective operating frequencies.

Probable Assignee: FLUID EFFECTS CORP

Earliest Publication Date: 19760102



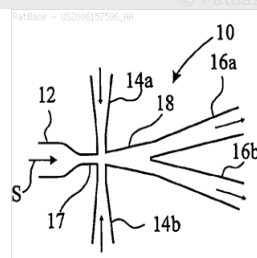
14) Family number: 33006997 (US2006157596A)

DISPLAY FOUNTAIN, SYSTEM, ARRAY AND WIND DETECTOR

Abstract: Source: US2006157596A A fountain (50) comprises a supply of water under pressure, a primary fluidic diverter (10) having an input (12) for said supply, and first and second outputs (16 a, b) diverging from said input. Two control ports (20 a, b) are provided with control flow to direct input flow to one or other of the two outputs that lead to the two inputs of a vortex amplifier (40). This comprises a vortex chamber (54), a radial port (50), a vortex inducing port (60) and an axial output port (58). One (16 a) of the diverter outputs is connected to the vortex inducing port, the other (16 b) to the radial port, so that supply to said axial output port is modulated by formation of a vortex in the chamber when flow is to the vortex inducing port. The axial port leads to a nozzle whereby a vortex spray or axial jet is produced, depending on which diverter output (16 a, b) is active. A wind detector (100) has a vertical jet (102) and a catcher (104) which fails to catch water from the jet in high wind conditions. The catcher feeds the control port (20 a) of a diverter 10₁, or such other pressure or flow detector as may be convenient. A fountain array of elements may comprise a number of diverters, the outputs of which have branches supplying the control ports of others in the array, whereby internal control is provided.

Probable Assignee: TIPPETTS FOUNTAINS LTD

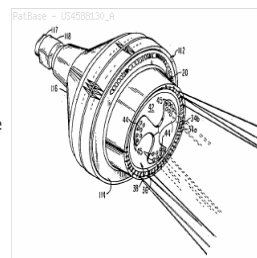
Earliest Publication Date: 20040602



15) Family number: 5022136 (US4588130A)

SHOWERHEAD

Abstract: Source: US4588130A A showerhead has a series of orifices together with a series of spray outlets and a turbine with a valve for sequentially opening successive ones of the orifices. The turbine is driven by water emitted from a nozzle. A multiply-apertured flow director plate communicates water to the nozzle, the orifices and the outlets. Overlying the director plate is a control plate that selectively couples water to different ones of the apertures in the director plate as the latter is moved by a control ring. First, second and third passages are defined in the showerhead, the first between an aperture in the director plate to the nozzle and also through the valve to the orifices, the second from an aperture in the director plate to the outlets and the third from an aperture in the director plate in bypass of the nozzle but through the valve to the orifices in a manner to retard the speed of the turbine. A first set of shutters on the control plate serves to close the third passage, open the first passage and variably open the second passage during opening of the first passage as the control plate is moved. A second set of shutters also defined on the control plate close the first and second passages, while opening the third passage again as the control is moved. The different combinations include a mode in which a comparatively slow delivery of pulses is combined with the delivery of a spray.



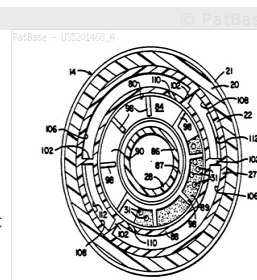
Probable Assignee: TELEDYNE IND

Earliest Publication Date: 19860513

16) Family number: 8342522 (US5201468A)

PULSATING FLUID SPRAY APPARATUS

Abstract: Source: US5201468A A fluid spray apparatus has an inlet assembly and an outlet assembly that are rotatable with respect to each other. The inlet assembly attaches to a fluid supply and has an outlet opening through which the fluid passes. The outlet assembly has a plurality of inlets positioned to communicate with the outlet opening as the outlet assembly is rotated into different positions with respect to the inlet assembly. Each inlet communicates with a different passage through the outlet assembly and has a set of openings that form a unique spray pattern. One of the fluid passages includes a circular chamber in which a forced vortex is created by the fluid flow. A turbine valve is disposed in the chamber and is driven by the vortex to alternately cover and expose one set of openings. The turbine valve and a chamber wall have rough textured surfaces to reduce friction. The turbine valve is made of an acetal plastic filled with silicone and polytetrafluorethylene to further reduce friction. Appropriate selection of the sizes of inlet and outlet openings of the chamber regulates the pressure therein and optimizes the turbine operation.



Probable Assignee: KOHLER CO

Earliest Publication Date: 19930201

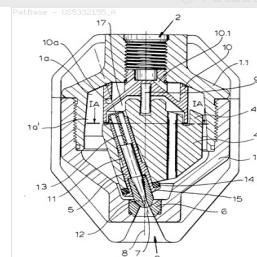
17) Family number: 9346282 (US5332155A)

ROTOR NOZZLE FOR HIGH PRESSURE CLEANING APPARATUS

Abstract: Source: US5332155A A rotor nozzle assembly has its nozzle rigidly fixed in the rotor body which is journaled at one side in a two-part housing which can be opened for replacement of the rotor body and nozzle as a unit.

Probable Assignee: JAEGER ANTON 89250 SENDEN DE

Earliest Publication Date: 19930930



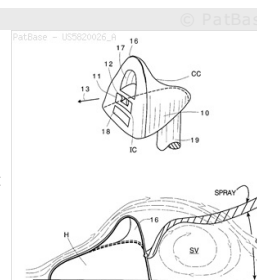
18) Family number: 11182585 (US5820026A)

HIGH-SPEED WINDSHIELD WASHER NOZZLE SYSTEM

Abstract: Source: US5820026A A windshield washer system wherein a nozzle is mounted on the hood of a vehicle and issues a jet of washer fluid in the ambient towards the windshield. The nozzle has a housing and a projecting surface, air deflector or tab formed to with or attached to the nozzle housing for aerodynamically assuring that the washer fluid impinges on the windshield in a predetermined area thereon at speeds above a predetermined minimum. In preferred embodiments, the projecting surface, air deflector or tab projects from about 6 mm to about 12 mm above the nozzle housing.

Probable Assignee: BOWLES FLUIDICS CORP

Earliest Publication Date: 19980702



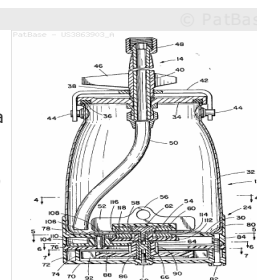
19) Family number: 1121857 (US3863903A)

AGITATOR ASSEMBLY FOR MIXING PAINT

Abstract: Source: US3863903A A paint agitator assembly comprising an impeller carried by a magnet in the cup for mixing the paint, with the paint discharge tube located between the impeller end and the cup wall for preventing a vortex. The magnet is rotated by a second magnet external to the cup, and the second magnet is in turn rotated by a high speed air turbine through a series of plastic gears arranged to provide speed reduction and high torque for rotating the first magnet. The air for driving the turbine is provided through a throttling valve and metering orifice to the air turbine and follows a tortuous path extending in sequence through circumferentially offset holes to reduce noise.

Probable Assignee: STEWART WARNER CORP

Earliest Publication Date: 19750204



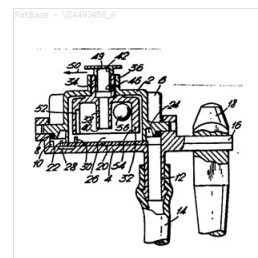
20) Family number: 1438341 (US4493458A)

ROTARY SPRINKLER

Abstract: Source: US4493458A A two-part housing in which is mounted an elastically stretchable diaphragm dividing the interior of the housing into a substantially peripheral inlet chamber, and a central outlet chamber. The underside of the diaphragm is accessible to the pressure prevailing in the inlet chamber while at least one substantially tangentially oriented passageway connects the peripheral inlet chamber and the central outlet chamber. An inverted cup-like rotor having a hollow shaft is rotatably mounted in the housing, and a tubular projection substantially aligned with the hollow shaft extends inside the rotor. The rotor has an annular peripheral wall, the inner surface of which is provided with at least one discontinuity serving as a race for a ball. A flow of water introduced through the inlet connector enters the central outlet via the tangentially oriented passageways producing a vortex flow and exits the outlet chamber via the hollow shaft and the nozzle-like opening, simultaneously, imparting to the ball an orbital movement which, when encountering the transient discontinuity, imparts an impulse-like, limited angular motion to the rotor.

Probable Assignee: DAN PURON

Earliest Publication Date: 19820101



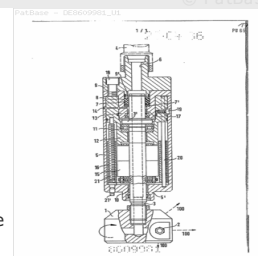
21) Family number: 16687740 (DE8609981U1)

Abstract: Source: DE8609981U1 (Claim 1) Waschkopf fuer die Innenreinigung von Rohren, Tanks od. dgl. Ansprueche 1. Waschkopf fuer die Innenreinigung von Rohren, Tanks od. dgl. mittels aus Spritzduesen an einem Rotor austretender und durch ihren Rueckstoss den Rotor antreibender Spritzmittel- strahlen, dadurch gekennzeichnet, dass der Rotor (1) mittels einer fest mit dem Rotor (1) verbindbaren und mit den Spritzduesen (2) kommunizierenden Hohlwelle (3) in einem undrehbar an einer Zufuehrleitung (4) angeordneten Gehaeuse (5) axial und radial gelagert und die Hohlwelle (3) im Gehaeuse (5) mit der Zufuehr- leitung (4) bzw.

Machine translation: (Claim 1) Wash head first for the internal cleaning of pipes, tanks or similar exigencies Cleaning head for cleaning the inside of pipes, tanks or similar means of spray on a rotor, exiting, and by their recoil the rotor of a driving beam spray, wherein the rotor (1) using a fixed to the rotor (1) connectable and with the spray nozzle (2) communicating hollow shaft (3) in a non-rotatable on a supply (4) arranged housing (5) is mounted axially and radially, and the hollow shaft (3) in enclosures (5) with the supply pipe (4) or

Probable Assignee: URACA PUMPENFABRIK GMBH AND CO KG 7432 BAD URACH DE

Earliest Publication Date: 19860619



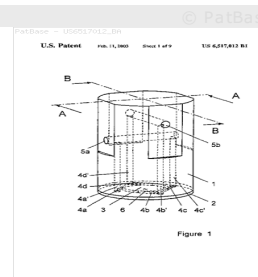
22) Family number: 20701456 (US6517012B)

METHOD FOR VARYING THE SWIRLING MOVEMENT OF A FLUID IN THE SWIRL CHAMBER OF A NOZZLE, AND A NOZZLE SYSTEM

Abstract: Source: US6517012B A method for modifying the swirl motion of a liquid in the swirl chamber of a nozzle, and a swirl generator for nozzles. Such nozzles are used in industrial burners, oil burners and installations for cleaning flue gas and spray-drying food. The invention provides a method and nozzle for adjusting the man droplet diameter at a constant volume flow rate on maintaining the droplet spectrum constant in case of adjustment of the volume flow rate. Partial flows are distributed across supply channels which differ in terms of their cross sections at their point of connection with the swirl chamber. When the partial flows are constituted by the sum of cross-sections of the channels branching off the corresponding flow. Thus, the sums of the cross-sections at the connection point with the swirl chamber are different.

Probable Assignee: JUERGEN KOHLMANN DR

Earliest Publication Date: 19990923



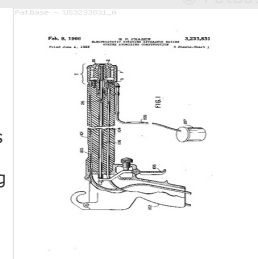
23) Family number: 22474956 (US3233831A)

ELECTROSTATIC SPRAYING APPARATUS HAVING VORTEX ATOMIZING CONSTRUCTION

Abstract: Source: GB1023721A 1,023,721. Spray-producers. SOC. ANON. DE MACHINES ELECTRO-STATIQUES. June 4, 1963 [June 4, 1962], No. 21493/62. Heading B2F. An electrostatic spraying apparatus comprises a passage 103 through which compressed air is fed into a chamber 4 by way of a plurality of tangential passages 6 and is discharged through the annular gap between the end 10 of a nozzle member 9 and the edge 5 of a nozzle head 2 as a vortex, a passage 17 through which paint c. is forced under pressure to be discharged between the conical head 19 of a pin 18 and a conical recess 20 in the member 9 into the said vortex, and means for electrostatically charging the liquid at or before its point of discharge. A high D.C. voltage may be fed through a cable to a resistor 31 connected by a spring 32 to a block of high resistivity material directly in contact with the liquid being fed through a passage 42 in order to charge the liquid. Alternatively the pin 18 may be of a conducting or high resistance material and connected to the voltage source. The liquid is discharged as a conical film with the spray head according to Fig. 2; Figs. 6-8 (not shown) depict modified shapes for the ends of the pin 18 and the passage 17. Longitudinal adjustment of the pin 18 is effected by a trigger device, Fig. 1 (not shown) which is limited in movement by an adjustable screw. In the embodiment of Fig. 5 (not shown), the air and liquid outlets are both adjustable by screw devices.

Probable Assignee: SAMES MACH ELECTROSTAT

Earliest Publication Date: 19640717



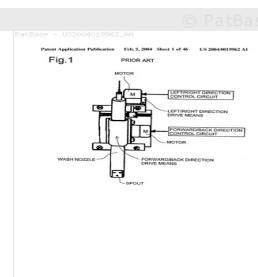
24) Family number: 23505717 (US2004019962A)

WATER DISCHARGING DEVICE

Abstract: Source: US2004019962A A novel water jetting device achieves a water jet of a wide range and an economization of water without using an electric drive device. A water jetting body 10 is so assembled in a vortex chamber 4 with its water jetting spout 11 confronting the outside of the force receiving member 12 that a force receiving member 12 can oscillate in a position inclined in the vortex chamber 4. A vortex flow thus established in the vortex chamber 4 is caused to make a flow velocity difference around the force receiving member 12, and a force generated on the basis of the flow velocity difference is exerted upon the force receiving member 12 to oscillate the water jetting body 10 in the inclined position in the vortex chamber 4 thereby to jet the cleaning water in the vortex chamber 4 from the water jetting spout 11.

Probable Assignee: TOTO LTD

Earliest Publication Date: 20020718



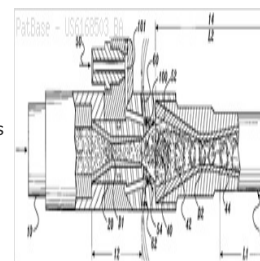
25) Family number: 24081197 (US6168503B)

METHOD AND APPARATUS FOR PRODUCING A HIGH-VELOCITY PARTICLE STREAM

Abstract: Source: US6168503B A method and apparatus for producing a high-velocity particle stream at low cost through multi-staged acceleration using different media in each stage, the particles are accelerated to a subsonic velocity (with respect to the velocity of sound in air) using one or more jets of gas at low cost, then further accelerated to a higher velocity using jets of water. Additionally, to enhance particle acceleration, a vortex motion is created, and the particles introduced into the fluid having vortex motion, thereby enhancing the delivery of particles to the target.

Probable Assignee: WATERJET TECHNOLOGY INC

Earliest Publication Date: 19990121



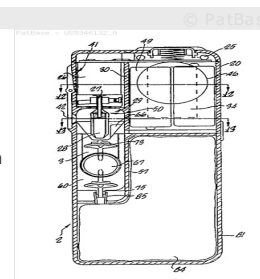
26) Family number: 28680545 (US5346132A)

MIST GENERATOR

Abstract: Source: US5346132A A device for generating a spray of mist or fine droplets includes a spinning rotor within a mist chamber. The rotor has inner walls which taper conically outwardly from the open bottom of the rotor to a hole near the top of the rotor. Liquid is pumped by a finger actuated pump from a cartridge module into a bowl surrounding the bottom end of the rotor. A spray is created as the liquid is formed into droplets as it passes through the hole in the rotor under centrifugal force. A directional light source is used for aiming the spray.

Probable Assignee: HAHN GARY S

Earliest Publication Date: 19940526



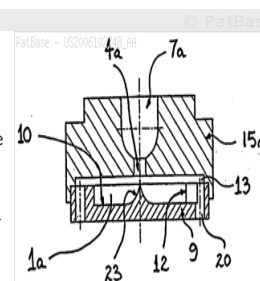
27) Family number: 30320746 (US2006102748A)

APPARATUS FOR REGULATING FLUID FLOW THROUGH A SPRAY NOZZLE

Abstract: Source: US2006102748A An apparatus for regulating fluid flow through a spray nozzle comprising a circular chamber (1) defined by spaced apart end walls, a peripheral side wall (3), a central axis, and a first inlet at or near the peripheral side wall (3) to allow a flow of fluid to enter said chamber (1) tangential to the peripheral side wall (3), and an outlet (4) exiting through one of the end walls. In use a flow of fluid entering through the first inlet has a primary lower layer (16) that follows a first circular flow path which forms a vortex commencing at the peripheral side wall (3) and increases in velocity and pressure towards the outlet and at least one secondary upper layer (17) that substantially follows a second flow path radially inwardly towards the central axis. The primary lower layer (16) and the secondary upper layer (17) interact and support each other over at least a portion of flow between the inlet and outlet (4).

Probable Assignee: ENGINEERING VORTEX SOLUTIONS PTY LTD

Earliest Publication Date: 20040226



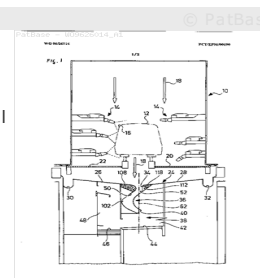
28) Family number: 30393833 (WO9626014A1)

WASHER, IN PARTICULAR FOR SPRAY-PAINTING INSTALLATIONS

Abstract: A washer, in particular for spray-painting installations, comprises a wash nozzle with an inlet, with a first deflection wall which diagonally deflects the gas flow and wash liquid in a first direction, with a second deflection wall which then deflects the gas flow and wash liquid in a second direction at an angle to the first direction, with a nozzle aperture and with an acoustic chamber situated in the wash nozzle, upstream of the nozzle aperture. To improve such a washer by substantially preventing any buildup of dirt in the wash nozzle while better reducing noise, the invention proposes that the inlet of the wash nozzle be formed by guide walls that are situated opposite each other and that allow an essentially spray-free flow of wash liquid into and through the inlet and onto the first and/or second deflection wall.

Probable Assignee: DUERR SYSTEMS GMBH

Earliest Publication Date: 19960822



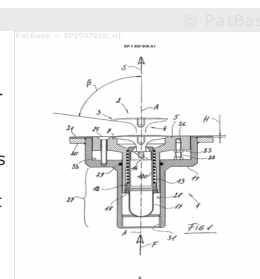
29) Family number: 31967998 (EP1537918A1)

WATER-JET WASHING VALVE

Abstract: Source: EP1537918A1 A valve for water-jet washing comprises: an adjustable body (5), a mobile shutter (2) that deflects the jet of water coming from the outlet (30) in directions that are transversal to the outflow direction (A). <??>This valve is characterised by further comprising: an external adaptor support (19), suitable for being fastened to a wall (20) and provided with a sliding seat (33) that can house the adjustable body (5) and allows sliding along a predetermined adjustment direction (S), one or more adjustment spacer elements (22, 23), for setting the relative position (H) of the adjustable body (5) with respect to the external adaptor support (19), at least along a direction not orthogonal to the mentioned predetermined adjustment direction (S),. <??>Furthermore, a method for fixing this valve to the wall (20) is described.

Probable Assignee: PNR ITALIA S R L

Earliest Publication Date: 20050608



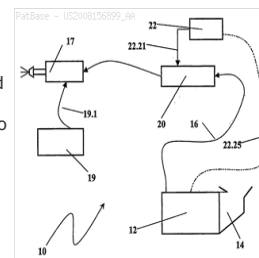
30) Family number: 32312043 (US2008156899A)

SLURRY INSTALLATION METHOD AND APPARATUS

Abstract: Source: US2008156899A The present invention provides a slurry spraying or installation system (10) including a gun means (12), a spray nozzle (17) and a conduit (16) connecting said gun means (12) to said spray nozzle (17), said gun means (12) including a pump means to move dry particulate towards said nozzle along said conduit (16), wherein between said gun means (12) and said nozzle (17) is a mixing device (20) which receives said dry particulate and mixes same with liquid under a greater pressure than the pressure that said dry particulate is under, so as to form a liquid and dry particulate mixture; said mixture being fed to said nozzle (17) for dispensing to a target.

Probable Assignee: SHINAGAWA REFRACTORIES AUSTRALASIA PTY LTD

Earliest Publication Date: 20051020



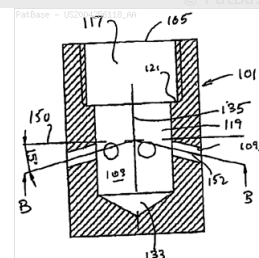
31) Family number: 32613820 (US2004256118A)

FIRE EXTINGUISHER DISCHARGE METHOD AND APPARATUS

Abstract: Source: US2004256118A A nozzle has a body with a central cavity from which a plurality of fire extinguishant fluid outlets extend. The outlets extend non-radially with respect to the central axis of the cavity, i.e. at least a portion of each outlet is inclined with respect to any plane parallel to and passing through the central axis of the cavity which intersects the portion of the outlet. The extinguishant from the non-radial outlets is thrown towards the walls of the chamber, along the paths. The jets of the fluid induce a rotational movement within the ambient fluid (for example, air) already present in the chamber, thus creating a vortex or rotational movement of the fluid within the chamber. In another embodiment, the vortex or rotational movement is generated by a nozzle assembly of generally cruciform configuration with three or more discharge tubes having outlets formed therein for discharging extinguishant in equi-angularly-spaced directions.

Probable Assignee: KIDDE IP HOLDINGS LTD

Earliest Publication Date: 20040602



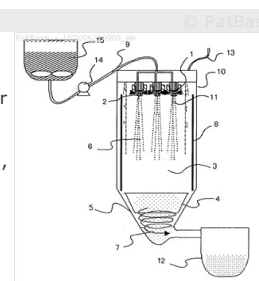
32) Family number: 33358875 (US2006210909A)

METHOD FOR PRODUCING A TONER, AND TONER

Abstract: Source: US2006210909A The object of the present invention is to provide a method for producing a toner which includes ejecting a toner composition fluid containing a toner composition which contains a toner and a colorant, from a nozzle vibrated at a constant frequency to make the toner composition fluid into droplets, and solidifying the droplets to be made into particles, in which the toner composition fluid comprises a toner composition, and the toner composition contains a resin, and a colorant.

Probable Assignee: RICOH CO LTD

Earliest Publication Date: 20060920



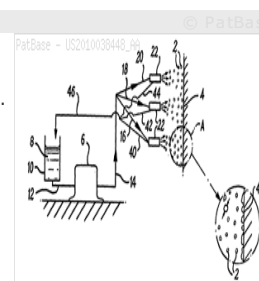
33) Family number: 34256342 (US2010038448A)

SPRAY DEVICE

Abstract: Source: US2010038448A A spray device that includes a swirl atomizer and a source of pressurized liquid. The atomizer includes a housing that defines a tubular chamber having a side wall, a first end wall, and a second end wall that opposes the first end wall. The atomizer further includes a bleed outlet channel in the second end wall that is configured to bleed an excess liquid from the atomizer, and a spray outlet channel in the first end wall. The spray outlet channel is narrower than the bleed outlet channel. The side wall includes a first face and a second face that opposes the first face. A length of the chamber between the first end wall and the second end wall is at least twice a width of the chamber between the first face and the second face of the side wall.

Probable Assignee: HUGHES SAFETY SHOWERS LTD

Earliest Publication Date: 20080626



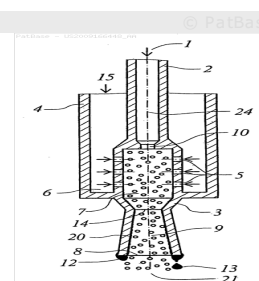
34) Family number: 34391356 (US2009166448A)

ATOMIZING NOZZLE FOR TWO SUBSTANCES

Abstract: Source: US2009166448A The invention relates to an atomizing nozzle for two substances, which is used for spraying a liquid with the aid of a compressed gas. Said atomizing nozzle comprises a mixing chamber, a liquid inlet that extends into the mixing chamber, a compressed gas inlet which extends into the mixing chamber, and an outlet located downstream from the mixing chamber. According to the invention, an annular gap is provided which surrounds the outlet and discharges compressed gas at a high speed. The inventive atomizing nozzle is used for purifying flue gas, for example.

Probable Assignee: WURZ DIETER

Earliest Publication Date: 20070419



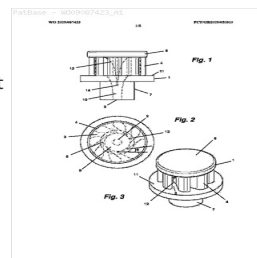
35) Family number: 41614417 (WO09087423A1)

IMPROVEMENTS IN OR RELATING TO JET NOZZLES

Abstract: The present invention relates to jet nozzles. In particular, it relates to a swirling jet nozzle for creating a high-velocity thin-film wall jet. The present invention provides a fluidic nozzle designed to create a long-range submerged mildly swirling round jet with a higher velocity centreline part, which subsequently develops into a high-velocity thin-film radial wall jet on impingement against a surface. The purpose of the high-velocity thin-film wall jet is, variously, suitable for use in surface preparation (such as cleaning, etching and removal and application of coatings and adhering particles), and for surface cooling and heating and drying. In particular we describe a fluid nozzle (1) comprising a circular outlet (2) having an outlet bore and an inlet (3) comprising a plurality of generally triangular-section vanes or fins (4) arranged substantially tangentially about a circle and defining a corresponding plurality of radial inlet openings between vanes and fins.

Probable Assignee: REDDING JOHN

Earliest Publication Date: 20090716



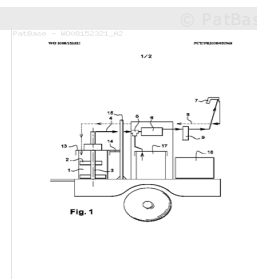
36) Family number: 42637273 (WO08152321A2)

DEVICE FOR APPLYING OR SPRAYING A HIGH-DENSITY MATERIAL

Abstract: This device for applying or spraying a layer of a high-density material onto a surface comprises: a tank (1) that receives said material in which the latter is subjected to stirring by means of a stirrer (2); a pumping system (3, 6) that ensures the routing of said material between the tank (1) and a spraying or application member (7). The stirrer (2) is equipped with means for: on the one hand, keeping the material to be applied or to be sprayed homogeneous; and on the other hand, for opposing the centrifugal effect of the corresponding stirring. The pumping system ensures a central and ascending pumping in the tank. The device is equipped with a return circuit (8) for said material that extends between the spraying or application member (7) and the tank (1) so that there is a permanent circulation during operation in a closed loop.

Probable Assignee: JJB DIFFUSION SOC PAR ACTIONS

Earliest Publication Date: 20081205



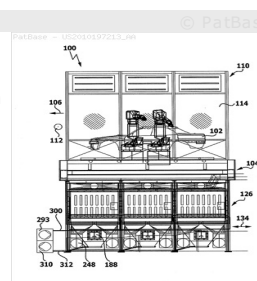
37) Family number: 42969230 (US2010197213A)

METHOD AND APPARATUS FOR INTRODUCING AUXILIARY MATERIAL

Abstract: Source: US2010197213A In order to provide a method of introducing auxiliary material into the flow path of a crude gas stream charged with wet-paint overspray before the crude gas stream passes through at least one filter element for separating the overspray from the crude gas stream, with which method an introduction of auxiliary material into the application region of a paint shop is reliably prevented even in the event of incorrect operation, a method is proposed, which comprises the following method steps: detecting whether there is an adequate crude gas flow through the at least one filter element; and blocking the introduction of auxiliary material into the flow path of the crude gas stream if it is determined that there is not an adequate crude gas flow.

Probable Assignee: DUERR SYSTEMS AG

Earliest Publication Date: 20090226



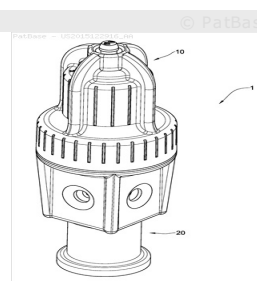
38) Family number: 55156044 (US2015122916A)

ATOMIZER

Abstract: Source: US2015122916A Provided is a liquid atomizer including a housing fitted with an inlet connectable to a liquid supply line. The housing can include a cavity with a longitudinal axis in flow communication with the inlet, at least one opening for emitting atomized liquid, and at least one vortex generating member formed with a vortex generating path in fluid communication with the cavity.

Probable Assignee: NAANDANJAIN IRRIGATION LTD

Earliest Publication Date: 20131114



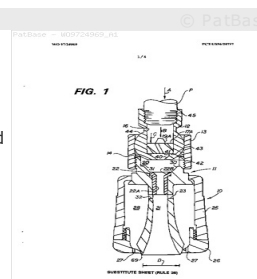
39) Family number: 8824094 (WO9724969A1)

WATER CONSERVING LOW PRESSURE SHOWER HEAD

Abstract: A shower head (10) for receiving water under gravity or low pressure comprising a nozzle (11), a connector (44, 45) for attaching the nozzle to a water conduit (P) and a vaned impeller (17A) disposed within a cylindrical passage of the connector and having a plurality of helical vanes (18A) connected to and radiating outward from a central core, the end portion of the core (19A) which faces the incoming stream of water being substantially conical. Another embodiment of the invention utilizes a vaned impeller that provides an axial passage (17B).

Probable Assignee: RAYMOND C ENGEL

Earliest Publication Date: 19970717



40) Family number: 10328733 (US5902457A)

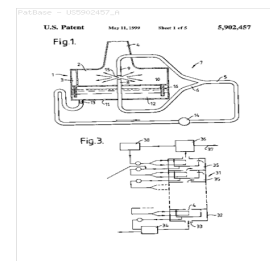
SPRAY GENERATORS

Abstract: Source: US5902457A An apparatus for generating a liquid spray from two jets of fluid which issue from a pair of opposing nozzles and interact, wherein the fluid is supplied to the nozzles under fully turbulent conditions such that random variations in the momentum of the fluid as it leaves the nozzles occur which results in random variations in the orientation of the resultant spray of liquid drops.

Probable Assignee: ACCENTUS PLC

Earliest Publication Date: 19950315





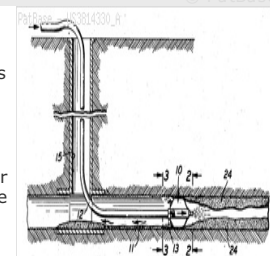
41) Family number: 1076702 (US3814330A)

NOZZLE

Abstract: Source: US3814330A A nozzle for cleaning the inside of piping, such as sewer lines and the like, receives high pressure water from a hose attached to the back thereof. The water is emitted from a front port or jet to dislodge debris clogging the pipe. The body of the nozzle is fluted thereby being divided into a series of vanes to permit the passage of loosened debris through the flutes and toward the rear of the nozzle. Each vane includes a plurality of thrust ports or jets mounted on a surface angular to the circumferential extremity of the nozzle and emitting water generally rearwardly to drive the nozzle and hose through the pipe. Each vane also includes a flusher port or jet which is mounted on a surface angular to both the circumferential extremity of the nozzle and the surface of the thrust port and which has an axis askew to the axis of the nozzle to create a volute flow of water to clear debris or sediment adhering to the inside of the pipe.

Probable Assignee: MCNEIL OHIO CORORATON A CORP OF MN

Earliest Publication Date: 19740604



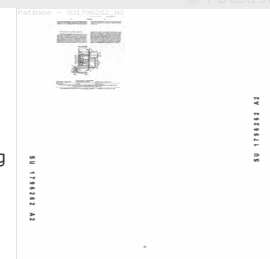
42) Family number: 10817892 (SU1796262A)

AEROSOL VORTEX RING GENERATOR

Abstract: Source: SU1796262A 1 The invention relates to a technique of moving the spray in the space, followed by precipitation or dispersion in a zone remote from the discharge space, and can be used in various industrial fields. The purpose of the invention. - Increasing productivity. To this end, the aerosol generator is provided with a vortex rings aerosol hopper additional outlet nozzle mounted coaxially with it on the opposite main side of the casing, and an additional spr ml yuschim apparatus with fixed blades on the housing, in the inner wall of the housing on both sides of impeller rows formed through holes. Rollers on the fingers are pressed against the spigots middle height of cams washer portions between their protrusions and depressions and are rotatably mounted with respect to the neutral position of the impeller blades relative to the aerosol flow. The generator provided additional flow formation of vortex rings in the time between the formation of the main flow and vortex rings in the opposite direction from the main aerosol stream side.

Probable Assignee: VNII MOLEKULARNOJ BIOLOG N PR

Earliest Publication Date: 19930223



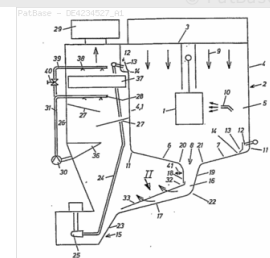
43) Family number: 11002889 (DE4234527A1)

RECOVERY SYSTEM FOR SPRAYED LOW-SOLVENT WATER-BASED PAINT - IN WHICH AIR LADEN WITH OVER:SPRAY PASSES THROUGH CIRCULATING DEIONISED WATER

Abstract: Source: DE4234527A1 Solvent-free or low-solvent water-based paint material is recovered in an arrangement of spray booth side walls (4) and floor surfaces (6,7) pref. at an angle less than 20 deg. to the horizontal and with a tapering guide channel (16) leading to the side of a collecting tank (15) with sloping wall (23), giving a laminar flow path. Air loaded with overspray passes into an air washer (26) into which de-ionised water or permeate in a closed circuit. Appts. is also claimed. ADVANTAGE - Process avoids or reduces use of filters.

Probable Assignee: MUELLER OTTO GMBH

Earliest Publication Date: 19940414



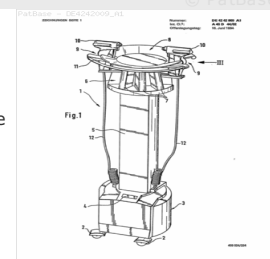
44) Family number: 11099482 (DE4242009A1)

HAIR DRESSING UNIT WITH PRESSURISED AIR APPLICATOR - HAS CARTRIDGE, SUPPLY PIPES AND PUMP, WITH WHEELS

Abstract: The mobile hair-dressing unit incorporates especially a pump, energy supply, manometer, valve and wheels. The pump is especially an air compressor, especially membrane pump. The compressed air pipes (12) have rapid couplings. The applicator (10) which dispenses hair treatment agent by pressurised air is in the form of a piston with outlet. The contents of the cartridge (7) are coded and have meters measuring the filled capacity. ADVANTAGE - The mobile hair-dressing unit enables the hair treatment agent to be applied directly to the hair in exactly metered quantities.

Probable Assignee: VOLZ ABC ELEKTROGERAETE

Earliest Publication Date: 19940616



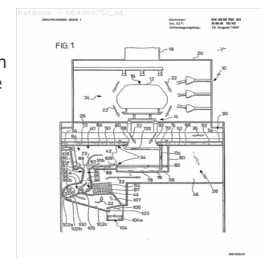
45) Family number: 11177175 (DE4303752A1)

PAINTING APPARATUS

Abstract: Source: DE4303752A1 In order to improve a painting apparatus, comprising a painting booth for receiving an article to be painted in a painting position, an air-guider device for guiding an airstream around the article and a discharge device having a washing-out appliance possessing a main washer traversed by the airstream and by the washing fluid and with a washing-out nozzle and a washing-out stage which is located downstream of the main washer and in which the airstream passes through a fluid curtain which itself can be generated by means of a guide wall deflecting the washing fluid emerging from the main washer, in such a way that as efficient a working as possible of the washing-out stage located downstream of the main washer and as complete a washing-out as possible of the paint carried along by the airstream in the washing-out appliance take place, it is proposed that the washing-out stage be designed as a drop-agglomerating stage, that a leading wall be arranged opposite the guide wall, that the leading wall extends from an outlet orifice of the main washer downstream of the airstream to beyond the fluid curtain, that the washing fluid of the fluid curtain impinges on the leading wall, and that the washing fluid is precipitated on the leading wall.

Probable Assignee: DUERR GMBH AND CO

Earliest Publication Date: 19940818



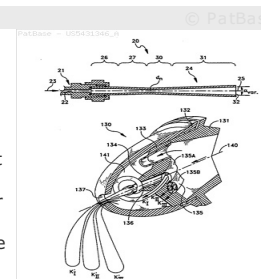
46) Family number: 11267329 (US5431346A)

NOZZLE INCLUDING A VENTURI TUBE CREATING EXTERNAL CAVITATION COLLAPSE FOR ATOMIZATION

Abstract: Source: US5431346A A nozzle for atomizing a liquid includes at least one Venturi tube. A Venturi tube defines a liquid flow path and has an entrance cone, an intermediate throat of diameter d_n , and an exit cone having a length along the flow path to an exit port of at least about $2d_n$. The exit cone also has an angle of divergence that varies from 0 DEG at the throat to about 6 DEG at the exit port. As liquid with an entrained gas, preferably constituting about 10-2 to about 10-3 fractions, passes through the throat in a Venturi tube with a Reynold's number greater than about 2300, the liquid static pressure reduces and the entrained gas forms cavities that grow as the liquid passes through the exit cone. The nozzle is substantially free of any structure that could disturb the flow in the nozzle sufficiently to allow the static pressure on the liquid to rise significantly in the nozzle. When the liquid emerges from the nozzle, the liquid static pressure rises and causes the gas cavities to collapse in a zone of collapse and to produce forces that are sufficient to atomize the liquid and to break atomic, molecular and crystalline bonds in the liquid.

Probable Assignee: SINAISKY NICOLI A

Earliest Publication Date: 19950202



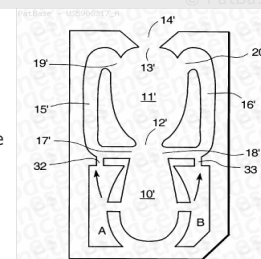
47) Family number: 11582902 (US5906317A)

METHOD AND APPARATUS FOR IMPROVING IMPROVED FLUIDIC OSCILLATOR AND METHOD FOR WINDSHIELD WASHERS

Abstract: Source: US5906317A A vehicle fluidic oscillator for causing a jet of liquid to repeatedly sweep through a selected fan angle has a power nozzle coupled to a source of liquid under pressure, an oscillation chamber having an upstream end and a downstream end with the power nozzle at the upstream end, and an outlet to ambient at the downstream end. A pair of opposed control ports are provided at the upstream end, and sidewalls which diverge from the upstream end and then converge towards the outlet. A pair of control passages connect the downstream end of the oscillation chamber with the control ports, respectively, and a pair of bypass passages, one for each control passage, respectively, connect each control passage with the source of liquid under pressure. A method of adapting a fluidic windshield washer nozzle oscillator to iterations in vehicle designs is carried out by adjusting the widths of the bypass passages in accordance with iterations in such vehicle design to: a) reduce the product design cycle time and b) reduce total system cost.

Probable Assignee: DLHBOWLES INC

Earliest Publication Date: 19990525



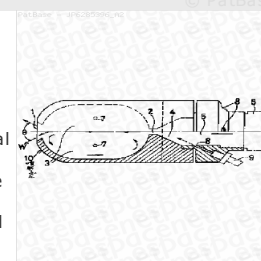
48) Family number: 11620185 (JP6285396A)

SURFACE WASHING METHOD AND WASHING DEVICE BY SELF-OSCILLATED JET

Abstract: Source: JP6285396A PURPOSE: To open a new way of use and to intensify jet flow by using a self-oscillation type injection nozzle which laterally oscillates a water spraying direction by a flat vortex chamber formed by expanding a water path just before an injection port to the right and left for a surface washing. CONSTITUTION: About half of the volume of the water to be fed is replaced with air and the washing power is improved by the lateral oscillation of the air bubble-contg. pressurized water jet and the cavitation effect at the time of air bubble impingement as the surface washing method. Eaves-shaped weir plate parts are added to the top and bottom of the outside end of the injection port 1 and amplitude regulating guide parts are added to the outside ends on both sides of the injection port 1, by which the vertical diffusion of the jet and the excess lateral oscillation are suppressed and the washing power is intensified as the washing device.

Probable Assignee: MIRAI GIJUTSU KENKYUSHO KK

Earliest Publication Date: 19941011



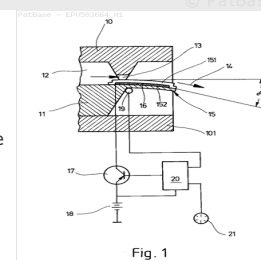
49) Family number: 11804169 (EP0583664A1)

NOZZLE FOR WINDSCREEN WASHER APPARATUS.

Abstract: In the case of a spray nozzle for window washing systems of vehicles, which nozzle has a pressure chamber (12) which is accommodated in a nozzle housing (10) and has a pressure water feed and spray opening (13) for producing a washing jet (14), for the purposeful change in direction of the washing jet (14) there is provided a jet-guiding tongue (15) which, starting from the spray opening (13), extends in the outlet direction of the washing jet (14). The jet-guiding tongue (15) can be deformed in its length thermoelectrically or piezoelectrically in such a manner that the washing jet (14), guided along it after emerging from the spray opening (13), is deflected from the spray-opening axis by specified amounts of an acute angle (alpha). "

Probable Assignee: BOSCH GMBH ROBERT

Earliest Publication Date: 19940223



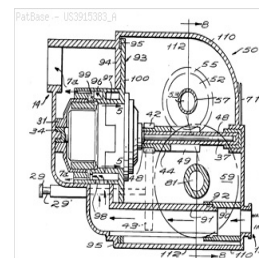
50) Family number: 1189453 (US3915383A)

SPRINKLER WITH SEALED MAGNETIC ROTARY MOTION TRANSMITTING MECHANISM

Abstract: Source: US3915383A A sprinkler having a drive shaft and reduction gearing therefor operatively connected to a water flow powered motor by a permanent magnet coupling. By utilizing a magnetic coupling, the reduction gearing can be completely sealed from the water flow and all foreign materials carried thereby without any impairment of the rotation of the turbine of the water motor. Also, the utilization of planetary reduction gearing is facilitated. The drive shaft may drive both an oscillating fluid delivery tube and the wheels of a travelling sprinkler.

Probable Assignee: NELSON CORP L R

Earliest Publication Date: 19751028



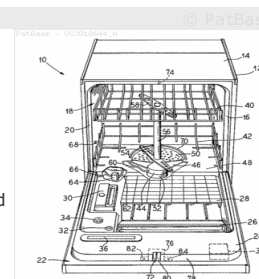
51) Family number: 1196571 (US3918644A)

INVERTIBLE DUAL ACTION SPRAY ARM FOR DISHWASHER

Abstract: Source: US3918644A An invertible spray arm for a dishwasher comprises two separate sets of spray nozzles, each in communication with a separate chamber in the spray arm and each providing a different spray pattern within a dishwasher. The spray arm includes a central member which may be of sheet material, which divides the spray arm into the two chambers and which, together with a supporting column, fluidically seals one chamber from the other. The spray arm includes a central aperture for receiving a manifold end of an upstanding hollow fluid carrying column and may be mounted on the manifold with either side of the spray arm up to effect fluid communication between the manifold and a desired chamber for obtaining a desired spray pattern.

Probable Assignee: WHIRLPOOL CO

Earliest Publication Date: 19751111



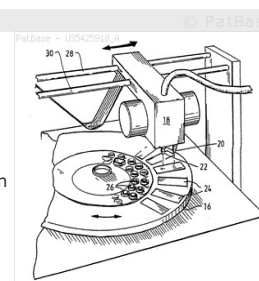
52) Family number: 11988035 (US5425918A)

APPARATUS FOR AUTOMATIC TISSUE STAINING FOR IMMUNOHISTOCHEMISTRY

Abstract: Source: US5425918A Apparatus (10) for the automatic staining of tissue includes a body (12) on which a carousel (16) rotates. The carousel (16) is able to carry a number of slides (24) bearing tissue samples. A delivery head assembly (18) is mounted on the body (12) for movement across the diameter of the carousel (16). The head assembly contains a clear nozzle (20) and a spray nozzle (22). A version (50) of the spray nozzle (22) for spraying a fluid biochemical agent onto a slide (24) has a main body (52) a plug (56) in the main body (52) and a cap (54) on the main body (52) between which there is a swirl chamber (68) into which fluid passes from the body (52). The fluid enters the swirl chamber (68) such that flow in the chamber (68) is concentric to the chamber axis and thereafter flows from the body (52) through an exit (66), thus minimising damage to the biochemical agent.

Probable Assignee: VISION INSTRUMENTS LTD

Earliest Publication Date: 19920206



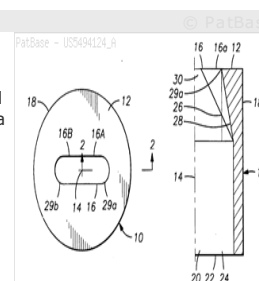
53) Family number: 12263323 (US5494124A)

NEGATIVE PRESSURE VORTEX NOZZLE

Abstract: Source: US5494124A A method and abstract of removing a surface subject to a subsurface pressure and an environmental surface pressure at least equal to the subsurface pressure, which comprises jetting fluid through a nozzle facing and located a predetermined distance from said surface, said nozzle being shaped to eject the fluid in a stream having a higher core pressure than said environmental pressure, said higher pressure stream having adjacent thereto at least one zone of pressure negative relative to said subsurface pressure, said distance being predetermined to expose said surface to said zone of negative pressure, whereby said surface is caused to explode into said zone of negative pressure from the force of said subsurface pressure.

Probable Assignee: VORTEX GROUP INC

Earliest Publication Date: 19950420



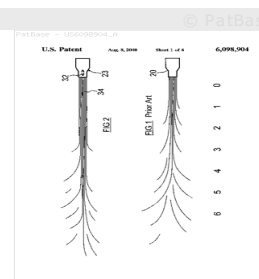
54) Family number: 12430585 (US6098904A)

NOZZLE FOR PRODUCING A HIGH-IMPACT LONG-RANGE JET FROM FAN-BLOWN AIR

Abstract: Source: US6098904A Blow-off nozzles are used for creating a high-energy air blast, for drying metal panels prior to painting. Depth or reach of penetration (in the atmosphere) is important. A bullet is provided in the center of the nozzle. The bullet is aerodynamically faired, for minimum drag. The effect of the bullet is to create a low pressure area in the jet downstream of the nozzle. The low pressure area serves to hold the jet together, preventing spreading, to a degree that enables a significant increase in penetration distance. The bullet is mounted on faired arms, which are secured to the walls of the nozzle.

Probable Assignee: AIR FORCE 1 BLOW OFF SYSTEMS INC

Earliest Publication Date: 19990910



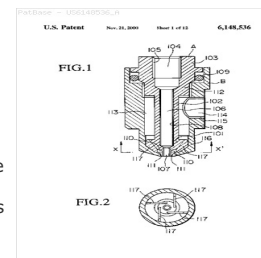
55) Family number: 12452986 (US6148536A)

TWO-FLUID NOZZLE AND DEVICE EMPLOYING THE SAME NOZZLE FOR FREEZING AND DRYING LIQUID CONTAINING BIOLOGICAL SUBSTANCES

Abstract: Source: US6148536A PCT No. PCT/JP96/03854 Sec. 371 Date Dec. 8, 1998 Sec. 102(e) Date Dec. 8, 1998 PCT Filed Dec. 27, 1996 PCT Pub. No. WO97/47392 PCT Pub. Date Dec. 18, 1997A two-fluid nozzle for atomizing a liquid by mixing the liquid and a gas at high speed, wherein desired particle size is obtained at a low pressure, and a device employing the same nozzle for freezing and drying a liquid containing a biological substance are disclosed. The two-fluid nozzle which is provided with a first injection hole for injecting the liquid and a second injection hole for injecting the gas, wherein the second injection hole is provided around the outer periphery of the first injection hole; a revolving means (108 or 118) is provided to at least the front portion of the first injection hole for rendering the liquid into revolving flow; and a revolving means (117) is provided to at least the front portion of the second injection holes for rendering the gas into revolving flow, is suitable for atomization of a liquid containing a biological substance because the atomization at a low pressure is possible through operation of the revolving means for rendering the gas and liquid into revolving flows.

Probable Assignee: NIPPON TELEGRAPH AND TELEPHONE CORP

Earliest Publication Date: 19970318



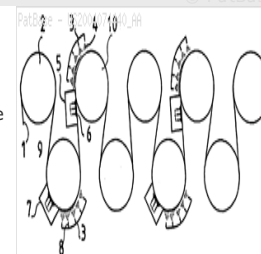
56) Family number: 13401527 (US2004074440A)

ASSEMBLY FOR TREATING A WEB OF PAPER OR PAPERBOARD

Abstract: Source: US2004074440A An assembly is disclosed treating a moving web (1) of paper or paperboard with a web treatment substance, the assembly comprising an application chamber (P2) located in a close vicinity of the moving web (1) and facing the web (1), whereby the chamber is delineated by the web (1), the walls (12) of the coater apparatus and sealing means (18, 24, 35) adapted to operate at the web ingoing and outgoing sides of the application chamber (P2). For application of the web treatment substance, the assembly includes at least one linear nozzle array incorporating at least one nozzle (21) for spraying the web treatment substance onto the web (1). The coater apparatus is divided into chambers so that a suction chamber (P3) is located behind the application chamber (P2) as seen from the direction of the web (1) and is adapted to communicate with application chamber (P2), and a flow is established into the suction chamber (P3) and the application chamber (P2) for removing mist and accumulations of the web treatment substance in such a manner that the pressure of the application chamber (P2) is made lower than the ambient pressure and the pressure of the suction chamber (P3) lower than that of the application chamber. In the assembly, the free flow direction of substances contained in the assembly is firstly from the surroundings into the application chamber (P2) and then from the application chamber (P2) to the suction chamber (P3) and means (22) serving to establish the flow.

Probable Assignee: VALMET TECHNOLOGIES INC

Earliest Publication Date: 20020914



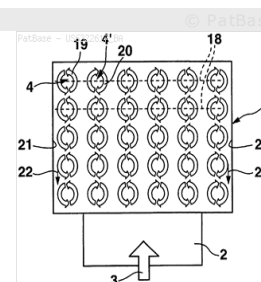
57) Family number: 13591906 (US6322617B)

PURIFICATION DEVICE FOR SEPARATING GASEOUS OR PARTICULATE CONSTITUENTS FROM GAS STREAMS

Abstract: Source: US6322617B A scrubbing apparatus for separating gaseous or particulate contents, especially from flue gas, using a plurality of spin spray nozzles arranged such that adjacent spray nozzles have a different spin. Double spin spray nozzles can be used that produce oppositely aimed spray jets of different spin.

Probable Assignee: LECHLER GMBH AND CO KG

Earliest Publication Date: 19990225



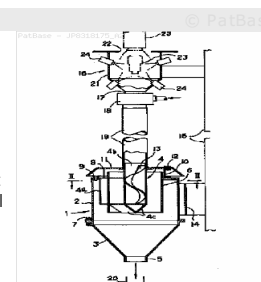
58) Family number: 14072549 (JP8318175A)

GAS-LIQUID SEPARATOR AND GAS-LIQUID SEPARATOR WITH WASHER

Abstract: Source: JP8318175A PURPOSE: To lower the resistance in a connecting pipe leading to a feeding port of a gas-liquid separator from a discharge pipe of a washer, and besides, to make maintenance easy, to reduce the installing and occupying area, to effectively form a vortex to promote gas-liquid separation efficiency and to adapt the separator to the separation of a discharged fluid on color change. CONSTITUTION: A tubular feeding port 4 installed in a main body part 1 of a cyclone is vertically installed in the center or to the center of the upper end part of the main body part 1, and also, a nozzle 4a of the feeding port 4 is installed in the tangential direction of a virtual circle having a diameter smaller than that of the inner peripheral surface of a cylindrical upper half part 2, and the volume or the like of a washer 16 is made large.

Probable Assignee: TOYOTA MOTOR CORP

Earliest Publication Date: 19961203



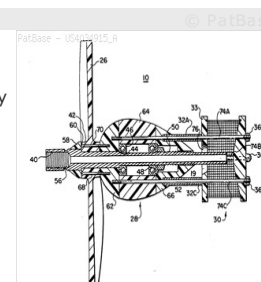
59) Family number: 1416087 (US4034915A)

SPRAY NOZZLE

Abstract: Source: US4034915A To prevent damage to the bearings and to provide a finer mist, the body of a spray nozzle for use in aircraft has an outer surface which curves outwardly from its longitudinal axis in the forward portion to provide minimum turbulence and curves inwardly at its trailing section to cause air to converge at a vortex within a screen cage that rotates with the body of the nozzle. The body is rotated by a propeller on ball bearings around an applicator tube which has its outlet positioned adjacent to the vortex to guide insecticide or the like into the vortex for spraying through the rotating cage.

Probable Assignee: GARNER EDWARD P

Earliest Publication Date: 19770712



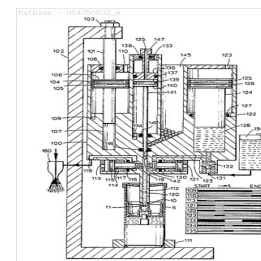
60) Family number: 14920653 (US4750532A)

DEVICE FOR EXTRACTING LIQUIDS CONTAINED THEREIN AND ARRANGEMENT FOR FILLING THE DEVICE

Abstract: Source: US4750532A A device to be filled with viscous liquid and provided with a distributor for extracting the liquid contained in a cylindrical container of the device further includes a piston movable in the container. A filling opening is provided in the piston. A filling tube is tight-sealed attachable to the filling opening.

Probable Assignee: GROTHFF GISELA

Earliest Publication Date: 19880614



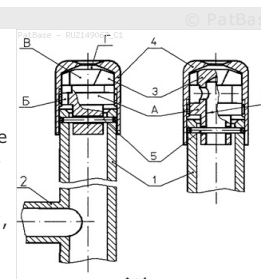
61) Family number: 15431326 (RU2149067C)

LIQUID SPRAYING APPARATUS

Abstract: Source: RU2149067C FIELD: agriculture, may be used in different branches of industry. SUBSTANCE: liquid spraying apparatus has casing with inner chamber communicated with inner cavity of cap via at least two bores uniformly distributed along circumferential portion of core and inclined with respect to outer cylindrical surface of core. Each bore has cross-section configured as incomplete segments with chords equally spaced from core axis, with space exceeding radius of central opening of nozzle, or configured as circular sectors with radius of inner arcs of circle exceeding radius of central opening of nozzle. Spraying apparatus of such construction allows liquid spray cone angle to be regulated. Spraying apparatus may be used in agriculture, as well as in other branches of industry, for instance, in car washing stations, in fire or spark extinguishing equipment for creating protective water curtains, ornamental fountains, shower mixers etc. EFFECT: increased efficiency, wider range of usages and reduced losses of vortex flow energy resulting in increased spraying area.

Probable Assignee: KHORMASH AOZT

Earliest Publication Date: 20000520



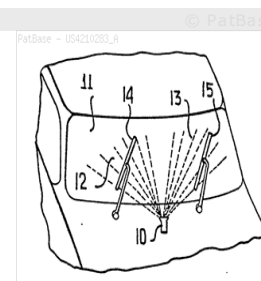
62) Family number: 1546070 (US4210283A)

DUAL PATTERN WINDSHIELD WASHER NOZZLE

Abstract: Source: US4210283A A dual pattern nozzle comprises a fluid oscillator of the type which utilizes an obstacle or island in the path of liquid flow to produce a vortex street downstream of the island. A flow splitter is disposed downstream of and sufficiently close to the island to prevent the flow around the island from re-combining before reaching the flow divider, whereupon liquid vortices are alternately issued from each side of the divider. The spinning liquid breaks up into two patterns of droplets, the patterns being directed at respective spaced areas.

Probable Assignee: FLUID EFFECTS CORP

Earliest Publication Date: 19800403



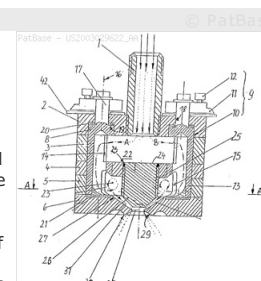
63) Family number: 15484305 (US2003029622A)

METHOD AND DEVICE FOR DISTRIBUTING LIQUID MEDIA

Abstract: Source: US2003029622A The invention relates to a method and a device for distributing liquid media, in particular extinguishing fluids for fighting fires, in the form of a mist or a stream of large droplets from a supply line which is maintained at a constant low-pressure, in rooms, for example in living spaces and recreation rooms, or similar. The aim of the invention is to provide a method and a device of the aforementioned type which can be used to produce a fine mist of small droplets and a jet spray of large droplets at separate moments, at approximately the same operating pressure of the extinguishing fluid, depending on the outbreak and the development of the fire, whilst at the same time minimising water consumption, reducing water damage caused during a fire and increasing cost-effectiveness, by creating a modular system which can be universally installed. To achieve this, the intensity of the vortex and the proportion of fine or large droplets in the spray cone is adjusted by regulating the quantity and speed of the flow of the sub-streams of extinguishing fluid, either separately or synchronously between a zero value and a maximum throughput value. In addition, the adjusting process is controlled by a signal generator which responds to the outbreak and dynamic development of the fire.

Probable Assignee: CLAUSS TORSTEN

Earliest Publication Date: 20010907



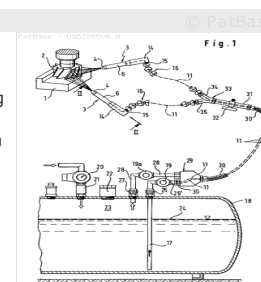
64) Family number: 16128082 (US5226506A)

COLLING-LUBRICATING DEVICE

Abstract: Source: US5226506A A cooling-lubricating device which is suitable especially to cool and lubricate cutting tools in machine tools and provides a gas/liquid stream which is sprayed on the location to be machined (50) through mixer heads (3) which have one outlet aperture (9') each, comprises at least two mixer heads to produce a mixture of gas and liquid. The mixture is supplied through flexible hose lines (11, 16) which can be bent individually into a desired inherently stable configuration so as to direct the mixer heads (3) with their outlet apertures (9') at the machining location (50).

Probable Assignee: LINK EDMAR

Earliest Publication Date: 19911205



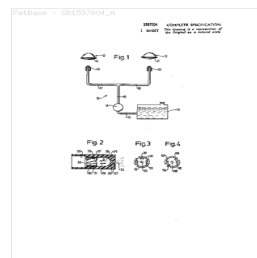
65) Family number: 1624491 (GB1597004A)

WASHER UNIT FOR VEHICLE LAMP COVER PLATES

Abstract: Source: GB1597004A (Claim 1) 1. A washer unit for a vehicle lamp cover plate, the unit having at least one spray nozzle and delivery means for supplying washing fluid to the spray nozzle via a supply line, which nozzle has a nozzle body penetrated by a nozzle passageway in communication with the fluid supply line and leading to a spray outlet in the nozzle body by a vortex body being disposed in the nozzle passageway and having at least two ducts which are arranged to receive washing fluid from the supply line and which extend obliquely to the axis of the nozzle passageway and have outlet openings on an end face of the vortex body remote from the supply line, the vortex body having a further washing fluid duct lying along the axis of the nozzle passageway, the outlet openings of the obliquely extending ducts being spaced apart from one another and non-uniformly distributed on the end face, whereby the spray emerging from the spray outlet has a fluid distribution which is non-uniform in a transverse crosssection.

Probable Assignee: BOSCH GMBH ROBERT

Earliest Publication Date: 19780531



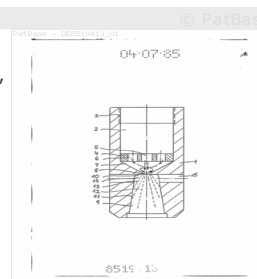
66) Family number: 16610800 (DE8519413U1)

Abstract: Source: DE8519413U1 (Claim 1) Einloch-Duesenbrausekopf Schutzansprueche 1. Einloch-Duesenbrausekopf mit einer dem Duesenloch folgenden, weiteren Strahlauslasskammer, dadurch gekennzeichnet, dass die Strahlauslasskammer (9) nahe ihrem dem Duesenloch (8) benachbarten Ende mit der Atmosphäre verbunden ist.

Machine translation: (Claim 1) single-hole Duesenbrausekopf Schutzansprueche first With the single-hole Duesenbrausekopf Duesenloch the following, further Strahlauslasskammer, therefore, that marked the Strahlauslasskammer (9) close to their Scales (8) adjacent end is connected to the atmosphere.

Probable Assignee: MOOCK HANS JUERGEN 2000 HAMBURG DE

Earliest Publication Date: 19850822



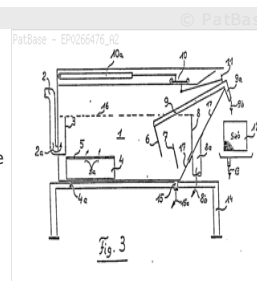
67) Family number: 16742905 (EP0266476A2)

PROCESS AND DEVICE FOR TREATING SLUDGE.

Abstract: In a process and a device for the separation and removal especially of lacquer sludge from a lacquer-sludge/water mixture, the lacquer-sludge/water mixture or the like is exposed to a directed horizontal flow in a vessel in the region of the water surface. At the same time, in a preferably front horizontal-flow portion, an essentially upwardly directed air-bubble flow consisting of very fine air bubbles is generated in the water, so that the suspended lacquer particles on the one hand float to the water surface and on the other hand are fed by means of the directed horizontal flow to a sludge discharge device.

Probable Assignee: IPSEN HARALD

Earliest Publication Date: 19870226



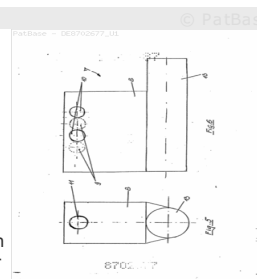
68) Family number: 16773739 (DE8702677U1)

Abstract: Source: DE8702677U1 (Claim 1) Vorrichtung zum Aufbereiten eines Lackschlamm-Wassergemisches Schutzansprueche 1. Vorrichtung zum Aufbereiten eines Lackschlamm-Wasser- gemisches, mit einem Auffangbehälter fuer das LackschlammWassergemisch in unterseitigem Anschluss an eine Lackspritz den kann, dadurch gekennzeichnet, dass im Auffangbehälter (3) zumindest eine Vermischungseinrichtung fuer den aufschwimmenden Lackschlamm mit einem LackschlammÜberlauf (7) angeordnet ist, der in der Umfangswandung (8) Wasserdurchgaenge (9,10, 11,12) aufweist und ueber eine ueberlauf-Ableitung (13) an die Trenn-/Austragvorrichtung (6) angeschlossen werden kann.

Machine translation: (Claim 1) apparatus for preparing a mixture of water-Lackschlamm Schutzansprueche first Apparatus for preparing a paint sludge-water mixture, with a Auffangbehälter for, the paint sludge-water mixture in bottom following a lacquer spray the, characterized in that the Auffangbehälter (3) at least one mixing device is for the floating paint sludge with a paint sludge over-running (7) arranged in the peripheral wall (8) Wasserdurchgaenge (9,10, 11,12) and which can be an overflow-derivative (13) to the Trenn-/Austragvorrichtung (6) is connected.

Probable Assignee: IPSEN HARALD 6054 RODGAU DE

Earliest Publication Date: 19870723



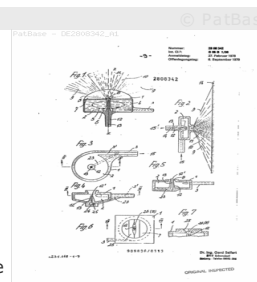
69) Family number: 1697917 (DE2808342A1)

VERFAHREN ZUM ERZEUGEN EINES KEGELFOERMIGEN SPRUEHSTRAHLES SOWIE DRALLDUESEN-KAPSEL ZUR AUSUEBUNG DES VERFAHRENS SWIRL NOZZLE FOR LAWN SPRINKLER OR WINDSCREEN WASHER - HAS SECOND FLUID JET INJECTED INTO SPRAY JET TO FORM CONICAL JACKET JET

Abstract: Source: DE2808342A1 Patentansprueche 119 Verfahren zum Erzeugen eines kegelfoermigen Spruehstrahles mit vergleichsweise grossem Oeffnungswinkel unter Anwendung einer Drallduesen-Kapsel, dadurch gekennzeichnet, dass man in Richtung zentrisch zur Kegelachse (Z) und von der Spitze (S) des Spruehstrahlkegels (9) her einen zweiten Flussigkeitsstrahl (11) in den Spruehstrahlkegel einspeist, derart, dass der kegelfoermige Spruehstrahl (9) mit grossem Oeffnungswinkel ein Mantelstrahl ist 2. The swirl nozzle produces a cone-shaped spray jet of large opening angle. A second fluid jet (11) is fed into the spray jet cone (9), central to the cone axis (Z) and emerging from the cone tip (S). This causes the jet cone to be formed into a jacket jet. For the second jet a fluid is used which has different physical and/or chemical characteristics relative to the jacket jet. The fluid of the second jet has a circular movement applied to it. The direction of swirl of the fluid of the second jet is in the opposite direction to that of the first jet.

Probable Assignee: SEIFERT GERD W DR ING

Earliest Publication Date: 19790906



70) Family number: 17023669 (CN2439834Y)

SHOWER NOZZLE

Abstract: Source: CN2439834Y The utility model discloses a shower spray head. One side of a handle of the shower spray head is fixedly connected with two spray head bodies, and comb teeth are arranged on a large spray head body. A front cavity part of the handle is provided with a three-way plug valve, and two water outlets of the three-way plug valve are respectively communicated with water inlets of the two spray head bodies for forming water flow passages. The two water flow passages are provided with cone-shaped relevant tangent inlets close to the water inlets of the spray head bodies. Vortex water flow which is generated by the utility model makes flow resistance reduced, makes flow direction uniformly distributed, and makes invalid rate of water consumption reduced. The utility model which can be used for the old, the young, and the weak for spraying has the single and integral multiple functions of combing, washing, massage, brushing, spraying, etc.

Probable Assignee: TANG CHUANYING

Earliest Publication Date: 20010725

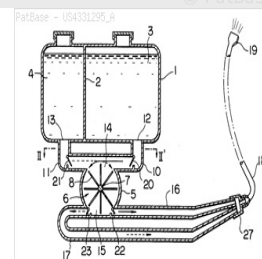
71) Family number: 17078157 (US4331295A)

WINDSHIELD WASHER

Abstract: Source: US4331295A A windshield washer having a jet nozzle adapted for ejecting a washing liquid to a windshield, a first reservoir for containing a first liquid such as water, a second reservoir for containing a second liquid such as a detergent solution, and a pump having a rotor for feeding the first or second liquid to the jet nozzle. By rotating the rotor selectively in the forward or reverse direction, the desired first or the second liquid is ejected from the jet nozzle as the washing liquid.

Probable Assignee: WARIHASHI HISANORI

Earliest Publication Date: 19801108



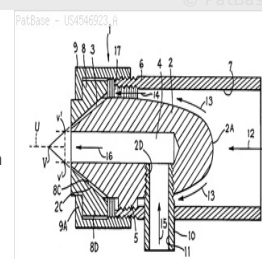
72) Family number: 17111698 (US4546923A)

NOZZLE FOR ATOMIZING FLUIDS

Abstract: Source: US4546923A PCT No. PCT/JP81/00061 Sec. 371 Date Jul. 28, 1982 Sec. 102(e) Date Jul. 28, 1982 PCT Filed Mar. 24, 1981 PCT Pub. No. WO82/01831 PCT Pub. Date Jun. 10, 1982. A nozzle for atomizing or discharging a liquid, particles, powder or the like in a uniform and stable state without disturbance, utilizing a rotating air current of low wind pressure, low velocity and low flow rate. A working fluid, for example air, is fed through a passage of a nozzle body, flows in a laminar state around a working fluid straightening member, and then passes through tornado-stage fluid slots and is discharged in a tornado shape vortex at the nozzle outlet. A vacuum is produced when the working fluid is discharged from the nozzle outlet, and a fluid to be atomized is drawn through a passage in the straightening member by this vacuum and is atomized together with the working fluid in a tornado shape at the nozzle outlet. The nozzle bore can be larger than in conventional nozzles.

Probable Assignee: II TADASHI

Earliest Publication Date: 19820610



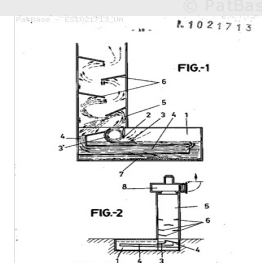
73) Family number: 17156464 (ES1021713Y)

PANTALLA PERFECCIONADA DE PINTADO A PISTOLA.

Abstract: Source: ES1021713U PANTALLA PERFECCIONADA DE PINTADO A PISTOLA, QUE TENIENDO POR FINALIDAD EFECTUAR EL LAVADO DE LA NIEBLA DE PINTURA APLICADA A PISTOLA, PARA ELIMINAR TODO TIPO DE SUCIEDAD Y CONTAMINACION, ESENCIALMENTE SE CARACTERIZA PORQUE SE CONSTITUYE A PARTIR DE UNA CUBA CONTENEDORA DE UN LIQUIDO DE LAVADO FORMADO POR UNA EMULSION DE AGUA ALCALINIZADA, CUBA QUE INCLUYE EN SU INTERIOR UNOS CANALES DE RETORNO DEL PROPIO LIQUIDO, UNA CHAPA VERTICAL DE BORDES EN DIENTES DE SIERRA SITUADA POR ENCIMA DEL NIVEL SUPERIOR DEL LIQUIDO DE LAVADO, ASI COMO UNA PLACA DE TURBULENCIAS EN DISPOSICION HORIZONTAL SITUADA INMEDIATAMENTE POR DEBAJO DEL CITADO NIVEL SUPERIOR DE AGUA, PROLONGANDOSE ESTA PLACA DE TURBULENCIAS EN UN TRAMO ARQUEADO FORMADO DE UN TORBELLINO DE AIRE Y LIQUIDO EN SU ABSORCION A TRAVES DE UNA CAMARA DE LAVADO CONFORMADA POR ENCIMA DE LA CUBA CONTENEDORA DEL LIQUIDO DE LAVADO, CONTANDO ESA CAMARA DE LAVADO CONCHAPAS DEFLECTORAS SITUADAS EN SUS PAREDES CON UNA DISPOSICION INCLINADA Y EN OPPOSICION, ORIGINANDO UN ITINERARIO ZIGZAGUEANTE, PREVIENDOSE EN LA PARTE SUPERIOR DE TAL CAMARA DE LAVADO EL CORRESPONDIENTE VENTILADOR CUYA ASPIRACION DE AIRE LLEVA CONSIGO EL ARRASTRE DE PARTICULAS DE AGUA. Improved spray painted screen, rather than having INTENDED TO MAKE THE WASHING OF THE MIST OF PAINT APPLIED TO GUN, TO REMOVE ALL KINDS OF dirt and contamination, essentially characterized in that it IS CONSTITUTED FROM A CUBA CONTAINING A WASHING LIQUID FORMED BY AN EMULSION OF WATER ALKALINIZED CUBA WHICH INCLUDES THEREIN A RETURN CHANNELS OF THE LIQUID itself, a saw-tooth EDGE VERTICAL PLATE LOCATED ABOVE THE UPPER LEVEL OF THE WASHING LIQUID, AS WELL AS A PLATE OF TURBULENCE IN HORIZONTAL ARRANGEMENT LOCATED IMMEDIATELY BELOW SAID UPPER LEVEL OF WATER, EXTENDING THIS TURBULENCE IN AN ARCUATE PLATE FORMED OF A SWIRL OF AIR AND LIQUID IN ITS ABSORPTION THROUGH A WASHING CHAMBER FORMED BY CONTAINER above the tub of the washing liquid, COUNTING THE WASHING CHAMBER OF THE CONCHAPAS BAFFLE PLATES LOCATED ON ITS WALLS WITH AN INCLINED ARRANGEMENT AND IN opposition, resulting in a zigzag path, BEING PROVIDED IN THE UPPER PART OF SUCH A WASHING CHAMBER THE CORRESPONDING FAN AIR SUCTION WHICH CARRIES entrainment of water particles.

Probable Assignee: HORNOS INSTALACIONES PANADERIAS LABORAL S A HIPSA

Earliest Publication Date: 19930101



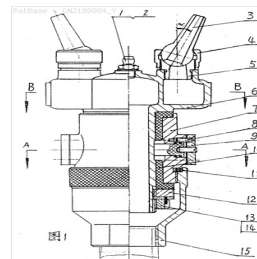
74) Family number: 17500172 (CN2189984Y)

POWERFUL SELF-SWIRLING AND SPRAYING WASHER

Abstract: Source: CN2189984Y The utility model relates to a novel spraying washer. A spin vortex chamber which can convert pressure energy of fluid medium into kinetic energy is arranged at the front of a spraying nozzle. Strong jet power is generated by the ejection of a main spraying nozzle and an auxiliary spraying nozzle, the spraying angle of the main spraying nozzle is adjustable, and the lower part is in spherical shape. A braking device which is composed of a braking column, a spring, screws, etc. is arranged out of a rotating shaft of the vortex chamber, the rotating and spraying angle can be dually regulated, which results in the washing effect of the spraying washer is optimum. The utility model has the advantages of electricity saving, water saving, compact structure, beautiful appearance and light weight. A low volume of the spraying nozzles are used to realize large areas of washing work, and the working medium and the spraying strength can be optionally uses. In addition, the powerful self-swirling and spraying washer is applicable for cleaning automobiles and mechanical parts, can also supply music fountain as enjoying to be used.

Probable Assignee: LI JINGDE

Earliest Publication Date: 19950222



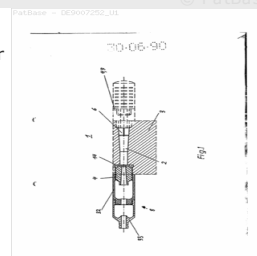
75) Family number: 17649617 (DE9007252U1)

Abstract: Source: DE9007252U1 (Claim 1) 1. Druckluftblaseinrichtung mit einem Wirbelrohr, das in einem Traegerkoerper ausgebildet ist und an dessen Kalt- luftduese und Warmluftduese jeweils ein Schalldaempfer loesbar angeordnet ist und das ueber einen Kanal mit Ventil mit einem Druckluftanschluss verbunden ist, dadurch gekennzeichnet, dass das Ventil als zweistufiges Stoessel- ventil (10) ausgebildet ist.

Machine translation: (Claim 1) 1 Druckluftblaseinrichtung with a vortex tube that is formed in a Traegerkoerper and at the cold-air nozzle and Warmluftduese each one silencer is arranged detachably and on one channel with a valve connected to a compressed air connection is characterized in that the valve as a two stage Stoessel- valve (10) is formed.

Probable Assignee: MAR RESEARCH GES F FORSCHUNG U ENTWICKLUNG MBH 2000 HAMBURG DE

Earliest Publication Date: 19900913



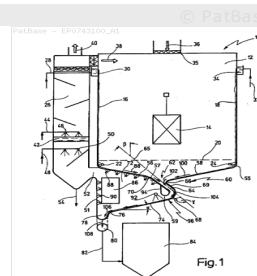
76) Family number: 17894773 (EP0743100A1)

EXIT CHANNEL FOR WET PRECIPITATOR

Abstract: The bend (66) in the inlet flow surface (58) is followed by a bend (68) in the opposite direction in the outlet channel (64) which changes into an inclined bottom surface (74) of the expansion chamber (72), with the angle of inclination to the horizontal being at least 10 deg. and may be between 10 and 30 deg. or between 10 and 20 deg. The oppositely orientated bend in the outlet channel may be greater than 90 deg. A second oppositely orientated bend may be connected to the first, and changes into the bottom surface of the expansion chamber.

Probable Assignee: WURSTER GERD

Earliest Publication Date: 19950720



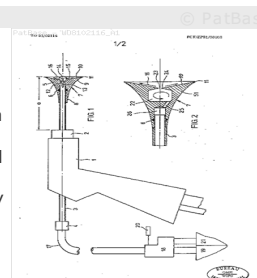
77) Family number: 1884208 (WO8102116A1)

POWDER SPRAYING DEVICE PROVIDED WITH A RINSING DEVICE

Abstract: A cylindrical rod (3) longitudinally movable is arranged centrally in relation to the spray (2) of a powder spraying pistol (1). A conical deflector (5) is mounted on its free end. The lateral surface (9) of the deflector forms a sharpe edge (11) with the conical concave front face (10). In the central exhaust channel (12) of the deflector (5) a rinsing nozzle is arranged provided with an outlet approximatively radial for the rinsing air supplied by a pressurized air source (19). The rinsing tip comprises a head (14) in the form of a mushroom forming a deflecting body disposed adjacent to the exhaust channel end (12). The nozzle may also be made in the form of a rotation nozzle by means of a sharpe annular edge and a whirling chamber or of a helical guiding flange. The rinsing air flows continuously along the front face (10) thus preventing any powder packing at this place. A switch valve (18) controlled by a key (20) can switch automatically the exhaust channel on a source of fire extinguishing gas (21) which blows the gas in the spraying region where there is the greatest danger of inflammation.

Probable Assignee: ESB VOEHRINGER

Earliest Publication Date: 19810806

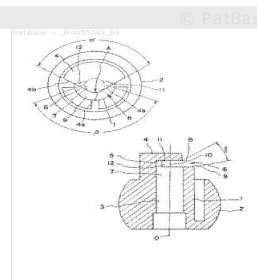


78) Family number: 19167694 (JP4055743B)

Abstract: Source: JP4055743B PURPOSE:To uniformly wash the entire surface of a head lamp by effectively utilizing a limited quantity of water, by forming the plane shape of the jet orifice opened to the end part of a cylindrical part into a specific structure. CONSTITUTION:The high pressure washing water supplied to a vortex stream forming cavity part 7 through a nozzle case is formed into water droplets by the water stream flowing out from a washing water jet orifice 6 and the high speed vortex stream divided by a drain edge 8 and formed in the vicinity of the jet orifice 6. At this time, the drain edge 8 of the washing water jet orifice 6 is formed by the tip 4a of a top wall part 4 having a curvature of which the diameter is almost the same with the inner diameter of a curved edge 9, and the jet orifice 6 is formed so as to have a plane shape wherein the tip of the drain edge 8 is set to a start point at the inner diameter position A of the curved edge 9 and the ridgeline 4b thereof terminates at the outer diameter position of the curved edge 9 and a limit wall 11 is formed to the opening shoulder part of the jet orifice 6. As a result, the limit wall 11 suppresses the upward scattering force of the washing water injected at a corner part and a jet direction is configurationally limited to a thin wide shape.

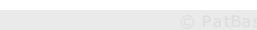
Probable Assignee: KOITO MFG CO LTD

Earliest Publication Date: 19880315



79) Family number: 1946285 (GB2175991A)

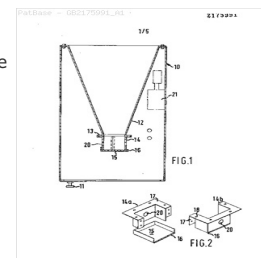
FLAME SPRAYING GUN



Abstract: Source: GB2175991A A flame spray gun for spraying pulverulent material is connectible to an unsealed powder hopper from which powder is in use disposed into a mixer body forming part of an injector unit. A nozzle connected to a source of compressed air projects into the mixer body and entrains powder. The mixture flows to the central duct (70) of a spray head where it terminates in an outlet co-planar with a mixing head (63). Compressed air - instead of the usual oxygen - is supplied to an annular duct (79) surrounding the powder duct (70) and a fuel gas, e.g. propane, is supplied to the mixing head (63) along a duct (90,92) surrounding the ducts (70,79). The mixing head (63) has a plurality of angularly equispaced jet bores (95) the axes of which are inclined at 15 DEG to the longitudinal axes of the ducts. A cowl (64) is fixed to the spray head.

Probable Assignee: PROPRIETARY COATING IND LIMITE

Earliest Publication Date: 19861210



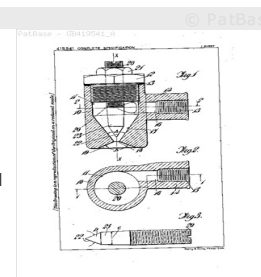
80) Family number: 20220015 (GB419541A)

IMPROVEMENTS IN OR RELATING TO SPRAY JETS AND NOZZLES, MORE PARTICULARLY FOR VISCOUS LIQUIDS

Abstract: Source: GB419541A 419,541. Spray-producers; nozzles. ALLEN, J. W., 345, Gray's Inn Road, London. June 7, 1933, No. 16381. [Class 69 (iii).] A spray nozzle more particularly for viscous liquids of the kind in which liquid is admitted through a tangential passage 16 into a conical whirl chamber 17 having an externally recessed outlet 19 is provided with an axial pin having a sharply tapered part 22 and less tapered part 23. The pin is screwed at 20 to permit adjustment. The preferred angles of the internal chamber 17 is 60<, the external recess 19, 125<, the point 22 of the pin, 55<, and the shaft 23, 5<.

Probable Assignee: JACK WILLIAM ALLEN

Earliest Publication Date: 19341114



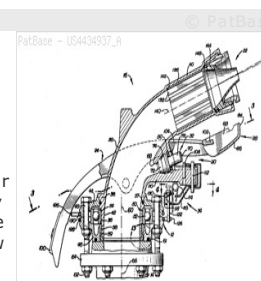
81) Family number: 2037348 (US4434937A)

REACTION DRIVE SPRINKLER

Abstract: Source: US4434937A A reaction drive sprinkler, particularly of the large gun type, is provided with an improved drive assembly adapted for full- or part-circle rotation of the sprinkler in steps about the axis of a water supply standpipe. The sprinkler includes a relatively large and outwardly inclined range tube from which a relatively high energy water stream is projected a substantial distance for irrigation purposes. The drive assembly comprises a drive nozzle mounted on the range tube for bleed passage of a relatively low energy portion of the irrigation water supplied to the range tube and for directing this low energy stream into engagement with one of a pair of oppositely angled deflector spoons at the end of a counterbalanced and pivotally mounted reaction drive arm. The drive nozzle is movable with respect to the range tube and is mechanically shifted by a reversing mechanism for aligning the low energy stream first for cyclic interruption by one of the deflector spoons to rotate the sprinkler stepwise in one direction through a preselected arcuate path and then for cyclic interruption by the other deflector spoon to rotate the sprinkler stepwise in an opposite rotational direction back through the preselected path. In one preferred form, the range tube is supported for rotation by a bearing assembly which includes a force-biased seal member responsive to increasing water pressure for increasing frictional resistance to rotation whereby the stepwise movement of the sprinkler is maintained substantially uniform throughout a range of water pressures. Moreover, the range tube is advantageously provided with a discharge nozzle assembly which is adjustable to select the angle of inclination of the projected high energy water stream.

Probable Assignee: GRUPO INDUSTRIAL RAMIREZ A CORP OF MEXICO

Earliest Publication Date: 19831117



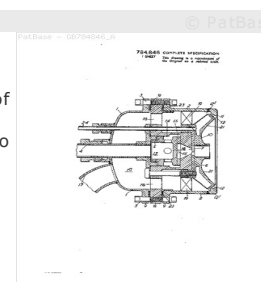
82) Family number: 20521872 (GB784846A)

IMPROVEMENTS RELATING TO LIQUID ATOMISERS

Abstract: Source: GB784846A 784,846. Spray-producers. FRASER, R. P. Oct. 10, 1955, No. 7738/57. Divided out of 784,845. Drawings to Specification. Class 69 (3). The subject-matter of this Specification is substantially the same as that contained in Specification 784,485, but the claims differ. Specifications 536,224, [Group XI] and 664,676 also are referred to.

Probable Assignee: REGINALD PERCY FRASER

Earliest Publication Date: 19571016



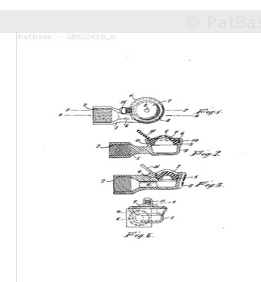
83) Family number: 20630205 (GB832418A)

IMPROVEMENTS IN OR RELATING TO SELF-CLEANING NOZZLE

Abstract: Source: GB832418A 832,418. Spray-producers. BAHNSON CO. Sept. 10, 1957 [May 20, 1957], No. 28522/57. Class 69 (3). A self-cleaning nozzle of the swirl type is fed with liquid from a passage 16, and the nozzle outlet 8 is provided in a dome-shaped cap 7 of an elastic material, e.g. rubber, detachably fitted in the top of the swirl chamber 3. The cap is flanged and is held against the flange 6 of the nozzle body by the liquid pressure: the cap has an integral tab 11 for its removal. A tapered tubular bushing 12 of an elastic material is held by a shoulder 15 at the end of the passage 16, and has a narrow outlet slit 13 arranged tangential to the swirl chamber. Any particles that become trapped in the bushing or cap cause expansion of the outlets thereof and the removal of the particles.

Probable Assignee: BAHNSON CO

Earliest Publication Date: 19600413



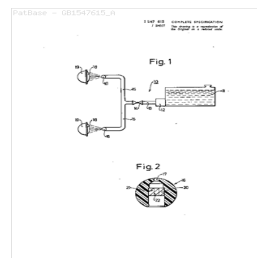
84) Family number: 2174505 (GB1547615A)

WASHER SYSTEM FOR VEHICLE SCREENS

Abstract: Source: GB1547615A (Claim 1) 1. A washer system for vehicle screens, which system has a reservoir for washing liquid, at least one washer nozzle for directing the washing liquid onto the vehicle screen and feed means adapted to supply the washing liquid at a feed pressure in excess of 3.5 bar by way of a feed line to the or each washer nozzle, the or each washer nozzle comprising a vortex nozzle having a nozzle body which is provided with an outlet orifice whose diameter is between 0.8 and 1.3 mm.

Probable Assignee: BOSCH GMBH ROBERT

Earliest Publication Date: 19760318



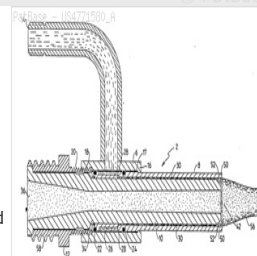
85) Family number: 2182963 (US4771580A)

NOZZLE FOR SAND BLASTING

Abstract: Source: US4771580A PCT No. PCT/AU85/00257 Sec. 371 Date Aug. 27, 1986 Sec. 102(e) Date Aug. 27, 1986 PCT Filed Oct. 28, 1985 PCT Pub. No. WO86/02587 PCT Pub. Date May 9, 1986. A device for spraying particulate material, comprises a nozzle (10) having an inlet for receiving particulate material under pressure and an outlet for discharging the material, and a housing (8) surrounding at least the outlet portion of the nozzle (10). Passages (30) defined between the housing (8) and the nozzle (10) having inlets to receive a wet fluid under pressure and terminate in an annular outlet zone (50) surrounding the outlet portion of the nozzle (10) whereby the particulate material discharged from the nozzle is surrounded by an annular stream of fluid discharged from the passages. The device may be used for sand blasting, with dry sand being discharged from the nozzle (10), the sand being enveloped within an annular stream of water discharged from the outlet zone (50) in order to minimize dust formation.

Probable Assignee: HARDBLAST AUSTRALIA PTY LTD

Earliest Publication Date: 19860509



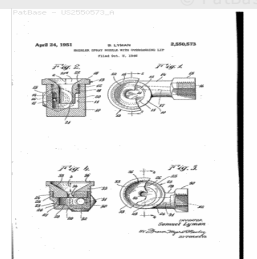
86) Family number: 21871119 (US2550573A)

WHIRLER SPRAY NOZZLE WITH OVERHANGING LIP

Abstract: Source: US2550573A (Claim 1) 1. What I claim is: A spray nozzle comprising a housing having therein a whirl chamber for liquid, an inlet for the liquid into said chamber extending tangentially to the wall of the whirl chamber, and a spray head having an axial generally conical discharge orifice with its largest diameter in proximity to the discharge end, said discharge end of the spray head having an inwardly directed annular lip extending axially beyond the largest diameter end of the conical orifice, the inner wall of the lip being tapered in opposed relation to the taper of the conical discharge orifice.

Probable Assignee: BUENSOD STACEY INC

Earliest Publication Date: 19510424



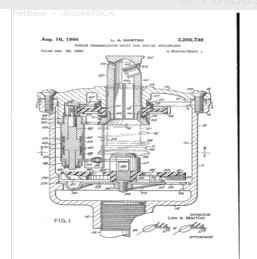
87) Family number: 21978900 (US3266730A)

TORQUE TRANSMISSION UNITS FOR POP-UP SPRINKLERS

Abstract: Source: US3266730A (Claim 1) 1. In combination with a lawn sprinkler having a chamber, a water inlet communicating with the chamber and a rotating nozzle communicating with the chamber, a torque transmission unit for imparting intermittent rotation to the nozzle including a stator-rotor type turbine mounted in the chamber between the nozzle and inlet, a rotatable cam driven by the turbine, a drive shaft in the chamber, arm means pivotally mounted in the chamber, means for biasing said arm means into engagement with the cam for oscillation upon rotation of said cam, unidirectional clutch means connecting the drive shaft and arm means for imparting intermittent rotation to said shaft upon oscillation of said arm means, and means for transmitting the intermittent rotation of said drive shaft to the nozzle, said arm means being oscillated one time upon each revolution of said cam whereby the unit has a high to low rotational speed reduction and a low to high torque transmission.

Probable Assignee: TELSCO IND

Earliest Publication Date: 19660816



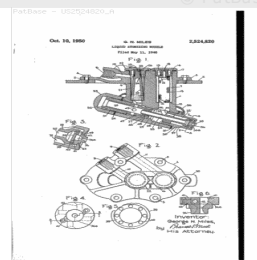
88) Family number: 22013050 (US2524820A)

LIQUID ATOMIZING NOZZLE

Abstract: Source: US2524820A (Claim 1) 1. A duplex type fluid spray nozzle comprising a body having two recesses opening through one end of the body and separate inlet passages for admitting liquid to the respective recesses, the body having also a transverse bore extending therethrough at the other end thereof and including a first bore portion communicating with the first of the recesses and a second bore portion communicating with the second recess, the body being provided with an annular shoulder intermediate the first and second bore portions and defining a central opening between said bore portions, filter means in each of the recesses, means secured to the body adjacent the open ends of the recesses for retaining the filters in the recesses and for closing, the open ends of the recesses, a front end cap containing a spray nozzle tip and a tip retaining sleeve and being secured in the first bore portion with the tip retaining sleeve extending rearwardly through the central opening in said annular shoulder, the bore through said sleeve being arranged to serve as the supply conduit for one set of orifices in the spray tip and at least one passage defined by the sleeve and the end cap for supplying liquid from the first recess to a second set of orifices in the spray tip, a hollow cylindrical sealing cone member in the second bore portion and having apertures tapered end portion engaging the outer surface of the rearward end of the tip retaining sleeve and an inner surface of said annular shoulder, said sealing cone member having a passage communicating between the interior thereof and said second recess, the interior of said cone member also communicating with the bore of said sleeve, a hollow cylindrical sealing member secured in the rearward end of the second bore portion and arranged to force the cone member into wedging relation between said sleeve and said shoulder to provide a fluid-tight seal between the first and second bore portions, and a rear end cap secured to the body to form a fluid-tight closure for the rearward open ends of said cone member and said sealing member.

Probable Assignee: GEN ELECTRIC

Earliest Publication Date: 19501010



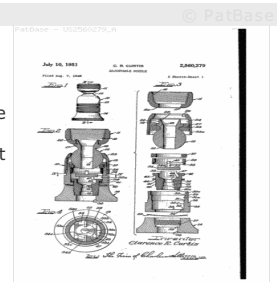
89) Family number: 22069214 (US2560279A)

ADJUSTABLE NOZZLE

Abstract: Source: US2560279A (Claim 1) 1 In an adjustable spray nozzle including, a ball member secured to a source of fluid under pressure and having a centrally extending aperture for the passage of fluid therethrough, the improvements of an internally threaded nut mounted on said ball for relative movement a hollow body portion having one end threadably retained in said nut and having an annular inwardly directed shoulder formed at its other end cylindrical sleeve having an annular shoulder a formed about one end bottomed on said body shoulder and having a centrally located restricted orifice formed internally of said sleeve, said sleeve having a plurality of stepped portions in communication with said orifice and increasing in diameter downstream of said orifice, a pair of upstanding shoulders on said sleeve upstream of said orifice an elongated plate seated in flatwise contact with said upstanding shoulders and disposed transversely to the fluid flow through the nozzle and means for effecting relative rotative movement between said plate and said shoulders.

Probable Assignee: F H SMITH MFG CO

Earliest Publication Date: 19510710



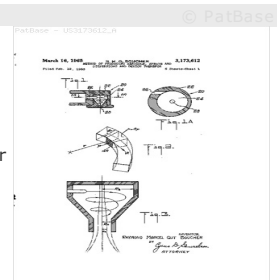
90) Family number: 22707371 (US3173612A)

METHOD OF PRODUCING AEROSOLS, SPRAYS AND DISPERSIONS AND DEVICE THEREFOR

Abstract: Source: GB1045603A 1, 045, 603. Automatic control of spraying. MACROSONICS CORPORATION. Jan. 29, 1964 [Feb. 12.1963], No. 3890/64. Heading G3R. [Also in Divisions B2, F4 and H1] The characteristics of spray from a nozzle 138 are maintained within a predetermined range by apparatus comprising a tube 146 which collects a sample of the spray and feeds it to a particle counter and sorter 141, said sorter developing an electrical signal for each size group which is a function of the number of particles of that size in the group and which is fed to a size distribution determiner and comparator 142, said comparator being programmed to produce error signals when the characteristics fall outside said range, a power supply 137, a driver 140, and a size control member 139. The member 139 may alter the frequency supplied to the nozzle transducer, the power supplied thereto, or the inlet liquid pressure. A system may be provided, Fig. 13 (not shown) whereby the spray particle size is automatically connected if the liquid inlet pressure is varied.

Probable Assignee: MACROSONICS CORP

Earliest Publication Date: 19650316



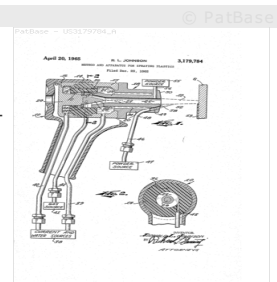
91) Family number: 22715126 (US3179784A)

METHOD AND APPARATUS FOR SPRAYING PLASTICS

Abstract: Source: US3179784A (Claim 1) A method of creating a plastic coating on a substrate, comprising providing an electrical plasma-jet torch, directing the plasma jet from said torch toward a substrate, and introducing a plastic powder into said jet at a region between said torch and said substrate.

Probable Assignee: GIANNINI SCIENT CORP

Earliest Publication Date: 19650420



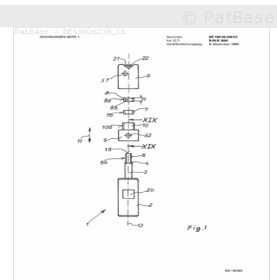
92) Family number: 22901265 (DE19826238C1)

HYDRAULIC SWIRL JET FOR CLEANING PIPELINES

Abstract: The hydraulic swirl jet casing is formed by a base casing (6) with a threaded (10a) hollow spigot (10) to receive an internally threaded (9a) end casing (9). The jet casing is attached to a support (2) by fitting over a pin (3) on the support to be retained by a nut (8) which prevents axial movement while allowing rotation.

Probable Assignee: SCHEIBE KURT

Earliest Publication Date: 19991209

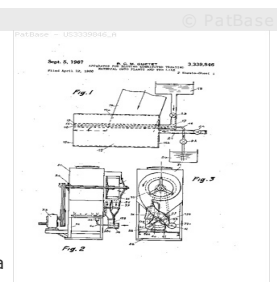


93) Family number: 23042485 (US3339846A)

APPARATUS FOR BLOWING COMMINUTED TREATING MATERIAL ONTO PLANTS AND THE LIKE

Abstract: Source: GB1068050A 1,068,050. Spray producers. R. C. M. GUETET. Oct. 24, 1963 [Oct. 24, 1962], No. 42090/63. Heading B2F. A device for generating a rotational jet of fluid has a hollow body 1a in the shape of a logarithmic spiral. The fluid is tangentially fed at 3a and discharges as a spiral vortex through an outlet 5. The tangential inlet may be inclined with respect to the body such that fluid is fed tangentially and towards the outlet 5. In an apparatus for producing a spray of two different materials - liquids or powders - in a spiral vortex of gas, the tangential inlet to the body is inclined, Fig. 7. and feed pipes for the materials are disposed within the hollow body 15 longitudinally thereof. In a wheeled crop spraying apparatus, which may be fed from a tractor power take-off, and incorporating two parallel and spaced jet devices each is fed with air and liquid from respective fan and tank mounted above the devices. In a modified form of this apparatus the treatment liquid is fed to the devices through a circulatory system. In another modification of this apparatus the two jet devices are dispersed coaxially with the result that one rotational jet is annular and surrounds the other. In yet a further apparatus a screw conveyor introduces powder into a single jet device. The wheeled apparatus of Figs. 13, 14 and 15 (not shown) has twin jet devices pointing in opposite directions laterally of the apparatus. These devices are mounted on a platform at the rear of the apparatus which is pivotable about a vertical axis. The devices are also capable of pivotal adjustment. If crop treatment requires a fanlike discharge from the rear of a trailer an apparatus similar to Fig. 20 may be used which has six adjustable jet devices 64 mounted in a vertical plane at the rear of the trailer.

Probable Assignee: ROBERT CHARLES MARIE GUETET



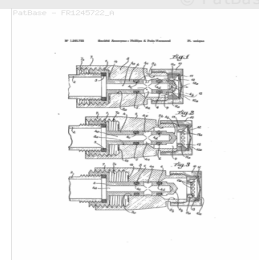
94) Family number: 23117032 (FR1245722A)

DISPOSITIF DE BUSE REGLABLE DEVICE ADJUSTABLE NOZZLE (MACHINE TRANSLATION)

Abstract: Source: FR1245722A (Claim 1) SUMMARY jet nozzle has adjustable , which will also body form of shutter the flow of liquid essentially with- an axial rod perforated with a blind bore which opens toward the back for connection to the arrival of liquid under pressure, which stem is pierced passages radiaux opening between two seals ring, and a sleeve screwing on this rod and end with a spray device kind of a room whirlwind, but provided an axial entry of such so that when the sleeve is screwed enough on the stem, the closed tip of the latter blocks the entrance axial spray device and consequently forces the liquid through the channels peripheriques oblique usual this device, which cause fa rotation of the mass of liquid in the Chamber vortex and the break- sor of the jet as the pellet was central perforation closes this room, whereas if the sleeve is unscrewed one discovers said axial entry by reducing pro movement gradually swirling in his room, and for a sufficient degree of unscrewing ing, one does penetrate the two annular seals in some low-diameter the sleeve comprehensively thereby closing the outlet of the liquid has from the bore blind rod.

Probable Assignee: PHILLIPS AND PAIN VERMOREL

Earliest Publication Date: 19601003



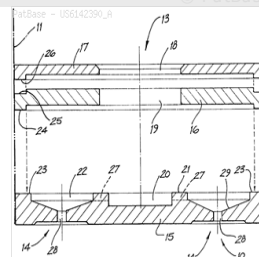
95) Family number: 24086121 (US6142390A)

NOZZLE ASSEMBLY FOR A SPRAY HEAD

Abstract: Source: US6142390A PCT No. PCT/AU97/00420 Sec. 371 Date Jun. 9, 1999 Sec. 102(e) Date Jun. 9, 1999 PCT Filed Jul. 3, 1997 PCT Pub. No. WO98/01229 PCT Pub. Date Jan. 15, 1998A nozzle assembly for a spray head (10) having a tubular body (11) that has an inlet (13) thereto and an outlet (14) therefrom, has a nozzle member (15) and a core member (16). The nozzle member (15) has a central chamber (20) adapted to be in fluid communication with the inlet (13) of the spray head (10) and a plurality of outer chambers (22) in communication with the central chamber (20) and adapted to be in fluid communication with the outlet (14) of the spray head (10). The nozzle member (15) and/or the core member (16) has means for spacing the core member with respect to the nozzle member (15).

Probable Assignee: EXELL TECHNOLOGY PTY LTD

Earliest Publication Date: 19980115



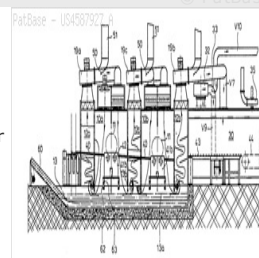
96) Family number: 2474379 (US4587927A)

PAINTING- AND EVAPORATION CABIN WITH AIR-RETURN VENTILATION

Abstract: Source: US4587927A Apparatus for applying of coating material on target objects (11), consisting of at least one painting cabin (10). A conveyor is passing the objects (11) step wise through the cabin (10) and through an adjacent evaporation cabin (30). The painting cabin (10) is divided into two adjacent zones consecutive in the direction of the conveyor movement through which zones air currents (V4a, V4b) are passed one after the other. Air currents (V2, V5) being drawn from the zones are washed and cleaned in related color particle separator devices (12a, 12b) and heated with heaters (22,24) above the respective due points. The solvent loaded discharge air currents (V10, V11) are fed from the evaporation cabin (30) into a combustion plant. The air currents are adjusted in such manner that in the entrance area underpressure exists and a fresh air current (V1) is passing into the cabin (10). A security control and maintenance equipment is described.

Probable Assignee: RMG BEIERLING GMBH

Earliest Publication Date: 19850214



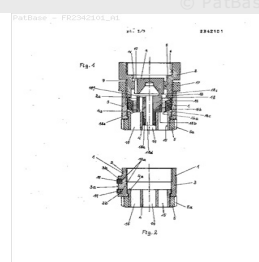
97) Family number: 2525541 (FR2342101A)

DISPOSITIF D'ECOULEMENT PULSED FLOW OUTLET FITTING - HAS OUTLET NOZZLE AND INLET SECTION WITH CENTRAL PROFILED INLETS

Abstract: Source: FR2342101A (Claim 1) 1. Dispositif d'ecoulement pour un jet d'ecoulement charge d'air, intermittent, a fibrillation, pulse ou de forme continue pour des domaines d'utilisation sanitaires ou techniques, constitue par un ajutage d'ecoulement et une partie d'admission, caracterise en ce que la partie d'admission presente plusieurs ouvertures d'admission profilees rectilignes ou coniques centrales, tandis que sur un prolongement filete cote ecoulement de cette partie d'admission est agence de facon ajustable et immobilisable axialement un ajutage d'ecoulement avec une piece de garniture d'ajutage mobile en rotation, cette derniere s'appuyant axialement sur la partie d'admission au moyen d'une ou plusieurs rondelles annulaires elastiques et d'une bague conique ou d'une colonne constituee par plusieurs rondelles annulaires identiques ou differentes empilees, la garniture d'ajutage presentant un alesage de succion d'air central autour duquel sont disposes en cercle centre ou excentre plusieurs alesages d'ecoulement, les alesages d'ecoulement de la garniture d'ajutage etant recouverts partiellement par la rondelle annulaire reposant sur cette garniture et un ajutage de succion mobile etant recouvert selectivement dans l'alesage de succion d'air afin de modifier le jet d'ecoulement. The outlet fitting gives an aerated or pulsating or continuous flow. It consists of an outlet nozzle (1) and an inlet section (2). The inlet section has several centered straight or conical profiled inlet apertures. The outlet threaded shoulder of the inlet section carries the axially adjustable and secured outlet nozzle with a turnable nozzle insert (4). The nozzle insert supports itself axially on the inlet section via circular elastic discs (16) and a conical ring (20). The insert has a central air suction bore (14), with outlet bores (15) centrally or eccentrically positioned around it. The outlet bores are partly covered by a disc. A movable suction nozzle (18) is inserted into the air suction bore, to alter the outlet jet.

Probable Assignee: HERMANUS HEINRICH

Earliest Publication Date: 19770825



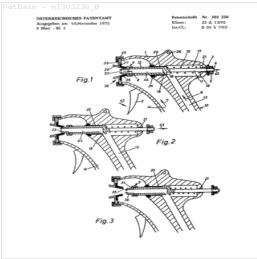
98) Family number: 25372 (AT303230B)

PRITZPISTOLE, INSBESONDERE FUER DICKFLUESSIGE UEBERZUGSMITTEL PRITZPISTOLE, ESPECIALLY FOR THICK COATING AGENT (MACHINE TRANSLATION)

Abstract: Source: AT303230B [Source: Claim 1] 4. Spritzpistole nach einem der Ansprueche 1 bis 3, d gekennzeichnet, dass die einzelnen Duesenteile leicht loesbar ausgebildet sind. [Source: claim 1] 4. spray gun after one of the claims 1 to 3, d marked that the individual parts of the nozzles are easily solvable.

Probable Assignee: MARTIN SEBASTIANI

Earliest Publication Date: 19721110



99) Family number: 2712681 (US4811903A)

VERY-WIDE-ANGLE NOZZLE UNIT FOR HEADLIGHT CLEANER

Abstract: Source: US4811903A A very-wide-angle nozzle unit for spraying water on a vehicle head lamp, comprising a short cylindrical member with a water ejection port at a top thereof. The port has curved upper parts and a water outing vane protrudes downwardly into the port. The cylindrical member is supported by a spherical member fitted in a nozzle unit case.

Probable Assignee: KOITO MFG CO LTD

Earliest Publication Date: 19880227

