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(54) **Valve for cleaning implements.**

(57) The invention relates to a brush 10 suitable to be connected to a conventional hose and including an automatic water shut-off valve means 28 which acts automatically when the brush is removed from the surface being cleaned. This is achieved by the provision of a seat 26 in a chamber 24 containing the valve means, wherein the valve means is continuously biased toward the seat of the water under pressure so that the valve means prevents water flow when in contact with seat, and operating means 62, 60, 46 to selectively force the valve means away from the seat and thereby allow water flow.

An automatic water valve is disclosed which includes a water inlet section pivotally connected to a water outlet section with a valve chamber intermediate to control water flow through the device. A flutter valve is loosely positioned within the valve chamber and is continuously biased toward the valve chamber seat by the water pressure. An operating rod is longitudinally movable within the water inlet and outlet sections and is fabricated of sufficient length to extend past the plane of the seat. When the automatic water valve is not in use, water pressure forces the flutter valve toward the seat and contact between the flutter valve and the operating rod causes the water outlet section to be axially aligned with the water inlet section with no water

flowing. When an implement connected to the water outlet section contacts the surface to be treated, the water inlet sections nozzle is bent about the pivot whereby the operating rod will force the flutter valve off of its seat, thereby automatically causing water flow through the device.

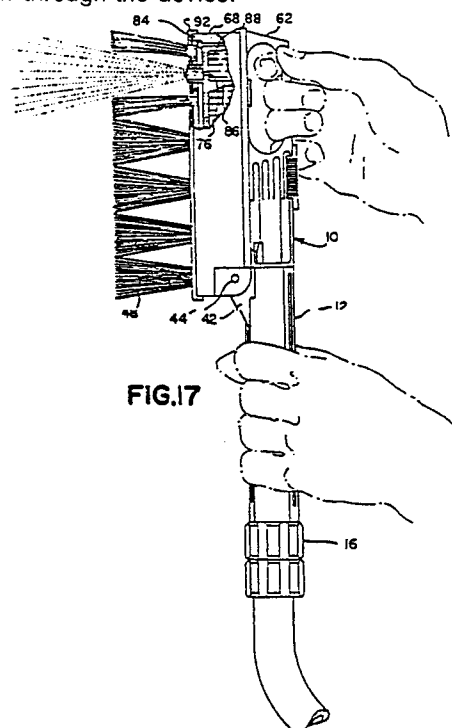


FIG.17

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IMPLEMENTS AND AUTOMATIC VALVES THEREFOR BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates generally to the field of implements using liquid such as brushes, and more particularly, is directed to an implement suitable to be connected to a conventional hose, especially a garden hose, and to automatic valves therefor

Description of the Prior Art

It is known to employ various types of brushes which are adaptable for connection to a source of water under pressure, for example a conventional garden hose. Such brushes include bristles suitable for cleaning polished surfaces without scratching, such as, the painted and polished surfaces of motor vehicles and similar flat or curved surfaces which may be conveniently cleaned using water.

Numerous types of car cleaning brushes have been developed by prior workers in the art and some such brushes, for example, the brush disclosed in U.S. Patent No. 5,432,666 include a turbine type of construction wherein at least a portion of the brush will be rotated by the water under pressure as it passes through the brush.

While the prior art types of water carrying brushes have generally proved to be effective in use, one common drawback is the fact that such brushes have been operated without any convenient method for shutting off the water supply other than by turning a faucet handle at the hose connection to the building water supply. Because of this, it was usually somewhat inconvenient to first turn on a remote water supply to apply water under pressure at the brush for cleaning purposes. Following the application of the brush and its water supply upon the surface to be cleaned, it was then necessary to go back to the remote faucet to turn off the water supply prior to drying the vehicle or other surface.

Despite the variety of prior art water equipped brushes that have been developed to date, the need remains to provide a brush having suitable valve means within the brush itself to permit control of the flow of water directly at the cleaning site.

It is known to employ various types of cleaning implements which are adapted for connection to a source of water under pressure, for example a conventional garden hose. Such cleaning implements usually comprise brushes having bristles suitable for cleaning polished surfaces without scratching, such as the painted and polished sur-

faces of motor vehicles and similar flat or curved surfaces which may be conveniently cleaned using water.

Numerous types of car cleaning brushes suitable for water hose attachment have been developed by prior workers in the art and some such brushes, for example the brush disclosed in U.S. Patent No. 4,532,666 include a turbine type of construction wherein at least a portion of the brush will be rotated by the water under pressure as it passes through the brush.

While the prior art types of water carrying brushes have generally proved to be effective in use, one common drawback is the fact that such brushes have been operated without any convenient method for shutting off the water supply other than by turning a faucet handle at the hose connection to the building water supply. Because of this, it was usually somewhat inconvenient to first have to turn on a remote water supply to apply water under pressure at the brush, then apply the water supplied brush upon the surface to be cleaned and then go back to the remote faucet to turn off the water supply to drying the vehicle or other surface.

Despite the variety of prior art water equipped brushes that have been developed to date, the need remains to provide an improved brush having suitable valve means within the brush itself to permit control of the flow of water directly at the cleaning site.

It is known to employ various types of water valves which are adapted for connection to a source of water under pressure, for example a conventional garden hose. Such water valves usually comprise manual water control means to manually turn on or turn off the flow of water from the hose through the device. Other water control devices have been developed which can more or less permit automatic water flow under the designed conditions.

Numerous types of water valves suitable for water hose attachment have been developed by prior workers in the art and some such valves, for example the valve disclosed in U.S. Patent No. 2,441,704 include an elongated valve stem construction wherein the valve stem is designed to be longitudinally angularly offset to permit the flow of water.

In U.S. Patent No. 2,525,615, a valve having an elongate valve stem is mounted within a casing which is affixed to a flexible tube. A squeezable grip is provided to allow the operator to bend the flexible tube upon squeezing the grip and the casing to thereby longitudinally offset the valve stem

to cause water flow. Patent No. 2,441,704 shows another type of water valve with an elongated, attached stem which is positioned directly within a flexible hose member. When the valve stem is longitudinally axially aligned, the valve is closed and no water can flow. When the flexible hose is bent, the valve stem is longitudinally offset and water can then flow.

Despite the variety of prior art elongated valve stem equipped valves that have been developed to date, the need remains to provide an improved automatic water valve having suitable valve means within the valve construction itself to permit automatic control of the flow of water directly at the site of use.

SUMMARY OF THE INVENTION

The present invention relates generally to the field of brushes suitable for use with hose connected water supplies, and more particularly, is directed to a brush construction including an integral automatic water shut-off valve. In accordance with the present invention, the operator can easily apply the brush and water to the surface to be cleaned and wherein the shut-off will function automatically to stop the flow of water when the brush is removed from the surface being cleaned.

The brush of the present invention includes a handle portion and a body portion having a water conduit therethrough wherein the water under pressure is directed through the bristles for direct application upon a surface to be cleaned. In the preferred embodiment, the brush body is provided with a detergent reservoir to facilitate the easy application of a detergent or liquid soap directly to the surface as the surface is being cleaned by the brush.

The handle portion connects to the body portion in a pivotal interconnection and is provided with conventional threads for connection to one end of a convention garden hose. The handle portion includes an axial water conduit therethrough and a valve chamber near the connection to the body portion. A further valve is freely movable within the chamber and is biased against a seat by the water under pressure to normally prevent water from flowing from the handle portion through the body portion.

An operating rod is axially positioned within the body portion and is axially movable toward and away from the seat of the handle portion. The inward end of the operating rod will normally extend into the valve chamber and rearwardly beyond the plane of the valve seat. When the brush is not in use, the water under pressure will normally force the flutter valve toward its seat and toward the

inward end of the rod. Upon contacting the inward end of the operating rod, the flutter valve under pressure will cause the handle portion to pivot relative to the body portion until the flutter valve can rest upon and seal against the seat. Once the valve is seated, there will be no tendency for the handle portion to angularly pivot any further. It is noteworthy that the pressure of the water continuously forces the flutter valve toward its seat to normally act as a shut-off to prevent water from flowing through the brush. When the brush is applied against a surface to be cleaned, the forces urging the brush against the surface will overcome the water pressure forces of the flutter valve against the end of the operating rod to cause the parts to pivot into axial alignment, thereby causing the operating rod to force the flutter valve from its seat. With the parts so arranged, the internal brush valve will then be open and water will flow freely from the hose, through the conduit in the handle portion, through the flutter valve and then through the interior conduit of the body portion.

In a preferred embodiment, an adjusting block is slidable within the interior cavity of the body portion in a manner to permit movement of the operating rod toward or away from the flutter valve. An adjusting lever extends from the block and is movable within a cam slot provided in the body portion to axially move the operating rod through an infinite number axially adjusted positions. Accordingly, by employing the adjusting lever, it is easily possible to adjust the quantity of water flow through the device when the brush is in use.

A detergent reservoir is preferably provided in the body portion above the bristles and includes an easily replaceable cap to facilitate the application of a liquid cleanser therewithin. In a preferred embodiment, the detergent reservoir is subdivided by an internal weir into a storage compartment and an application compartment. A measured quantity of liquid detergent can be urged over the weir by simply tilting the brush. In this manner, a small quantity of detergent can then be applied from the application compartment through a discharge orifice which is especially designed to allow gravity flow of a quantity of detergent to the surface being cleaned while the brush is being used. When the amount of detergent in the application compartment is exhausted, additional quantities of detergent can be added by again forwardly tilting the brush to allow a portion of the stored detergent to flow over the weir from the reservoir compartment into the application compartment.

It is therefore an object of the present invention to provide an improved brush with water shut-off of the type set forth.

It is another object of the present invention to provide a novel brush with water shut-off which

comprises a handle portion having an endward hose connection thereon, the handle portion being provided with an axial water conduit, the water conduit terminating inwardly in a valve chamber and a body portion pivotally connected to the handle portion, the body portion including a water conduit to receive water from the handle portion, the brush being provided with a flutter valve in the valve chamber to normally prevent water flow therethrough, and means to open the valve automatically when the brush is applied to a surface to be cleaned.

It is another object of the present invention to provide a novel brush with water shut-off comprising handle means for directing water flow therethrough, body means connected to the handle means to receive water from the handle means, the body portion having a surface cleaning brush secured thereon, valve means to normally prevent the flow of water from the handle means through the body means and operating rod means to open the valve means when the brush of the body portion is applied against a surface to be cleaned.

It is another object of the present invention to provide a novel brush with water shut-off which includes a handle portion and a brush portion pivotally connected together, the handle portion and brush portion having a water conduit therethrough, a normally closed valve intermediate the handle portion and the brush portion to normally interrupt the flow of water through the brush and valve operating means axially movable through the brush portion, the valve operating means being adapted to open the valve means when the brush portion is applied against a surface to be cleaned.

It is another object of the present invention to provide a novel cleaning implement with automatic water shut-off that is rugged in construction, automatic in operation and trouble-free when in use.

The present invention relates generally to the field of brushes suitable for use with hose connected water supplies, and more particularly, is directed to a cleaning implement including an integral automatic water shut-off valve. In accordance with the present invention, the operator can easily apply the cleaning implement and water to the surface to be cleaned and wherein the shut-off will function automatically to stop the flow of water when the cleaning implement is removed from the surface being cleaned.

The cleaning implement of the present invention includes a handle portion and a body portion having a water conduit therethrough wherein the water under pressure is directed through the implement for direct application upon a surface to be cleaned. In the preferred embodiment, the body portion is provided with a detergent reservoir to facilitate the easy application of a detergent or

liquid soap directly to the surface as the surface is being cleaned by the implement. The body portion further is equipped with means to interchangeably affix either a bristle brush or a sponge depending upon the cleaning chore to be undertaken. Both the brush and the sponge are provided with through openings to allow water under pressure to pass therethrough in a stream.

The handle portion connects to the body portion in a pivotal interconnection and is provided with conventional threads for connection to one end of a conventional garden hose. The handle portion includes an axial water conduit therethrough and a valve chamber near the connection to the handle portion to the water hose. A flutter valve is freely movable within the valve chamber and is biased against a seat by the water under pressure to normally prevent water from flowing through the handle portion and through the body portion.

An operating rod is axially positioned within the handle portion and the body portion has one end terminating at the valve chamber in position to contact the flutter valve. The operating rod is axially movable toward and away from the seat of the handle portion. The operating rod is fabricated of sufficient length to allow its inward end to extend into the valve chamber and rearwardly beyond the plane of the valve seat. When the cleaning implement is not in use, the water under pressure will normally force the flutter valve toward its seat and to bias the inward end of the operating rod. Upon contacting the inward end of the operating rod, the flutter valve under pressure will cause the operating rod to pivot the handle portion relative to the body portion until the flutter valve can rest upon and seal against the seat. Once the valve is seated, there will be no further bias of the flutter valve upon the operating rod and no further tendency for the handle portion to angularly pivot any further. It is noteworthy that the pressure of the water continuously forces the flutter valve toward its seat to normally act as a shut-off to prevent water from flowing through the cleaning implement. When the cleaning implement brush or sponge is applied against a surface to be cleaned, the forces urging the brush or sponge against the surface will overcome the water pressure forces of the flutter valve against the end of the operating rod to cause the parts to pivot into axial alignment. This will cause the inward end of the operating rod to enter into the valve chamber and to force the flutter valve from its seat. With the parts so arranged, the internal water valve will then be open and water will flow freely from the hose, through the flutter valve, through the conduit in the handle portion, and then through the interior conduit of the body portion. It is a feature of this invention to provide a water exit orifice in the body portion which is designed to

apply a direct stream of water upon the surface being cleaned when so desired.

In the preferred embodiment of the invention, a barrier is positioned within the interior cavity of the body portion in a manner to provide an abutment to be contacted by the forward end of the operating rod. The operating rod is operatively located within communicating water passages which are respectively provided in the body portion and the handle portion of the cleaning implement and has its rearward end in contact with the flutter valve. By precisely defining the length of the operating rod to be slightly larger than the combined length of the communicating water passages when the water passages are axially aligned, the operation of the flutter valve and consequently the flow of water through the cleaning implement can be easily controlled. As above set forth, the water pressure upon the flutter valve will normally cause the operating rod to angularly cock the body portion of the cleaning element relative to the handle portion to thereby allow the flutter valve to seat for positive water shut off.

A detergent reservoir is preferably provided in the body portion above the cleaning element and includes an easily replaceable cap to facilitate the application of a liquid cleanser therewithin. In a preferred embodiment, the detergent reservoir is subdivided by an internal weir into a storage compartment and an application compartment. A measured quantity of liquid detergent can be urged over the weir by simply tilting the cleaning implement. In this manner, a small quantity of detergent can be applied from the application compartment through a discharge orifice which is especially designed to allow gravity flow of a small quantity of detergent to the surface being cleaned while the cleaning implement is being used. When the amount of detergent in the application compartment is exhausted, additional quantities of detergent can be added by again forwardly tilting the cleaning implement to allow a portion of the stored detergent to flow over the weir from the reservoir compartment into the application compartment.

It is therefore an object of the present invention to provide an improved cleaning implement with automatic water shut-off of the type set forth.

It is another object of the present invention to provide a novel cleaning implement with automatic water shut-off which comprises a handle portion having an endward hose connection thereon, the handle portion being provided with an axial water conduit, the water conduit terminating endwardly in a valve chamber and a body portion pivotally connected to the handle portion, the body portion including a water conduit to receive water from the handle portion, the handle portion being provided with a flutter valve in the valve chamber to normally

prevent water flow therethrough, and means to open the valve automatically when the cleaning implement is applied to a surface to be cleaned.

It is another object of the present invention to provide a novel cleaning implement with automatic water shut-off comprising handle means for directing water flow therethrough, body means pivotally connected to the handle means to receive water from the handle means, the body portion having a replaceable surface cleaning element secured thereon, valve means to normally prevent the flow of water from the handle means through the body means and operating rod means to open the valve means when the cleaning element of the body portion is applied against a surface to be cleaned.

It is another object of the present invention to provide a novel cleaning implement with automatic water shut-off which includes a handle portion and a body portion pivotally connected together, the handle portion and body portion each having a water conduit therethrough, a normally closed valve means in the handle portion water conduit to normally interrupt the flow of water through the cleaning implement and valve operating means axially movable through the body portion and the handle portion, the valve operating means being adapted to open the valve means when the body portion is applied against a surface to be cleaned to automatically cause the flow of water.

It is another object of the present invention to provide a novel brush with water shut-off that is rugged in construction, automatic in operation and trouble-free when in use.

The present invention relates generally to the field of water valves suitable for use with hose connected water supplies, and more particularly, is directed to an automatic water valve including an integral automatic water shut-off. In accordance with the present invention, the automatic water valve can be associated with a known type of cleaning implement wherein the operator can easily apply the cleaning implement to the surface to be cleaned. The automatic water valve of the present invention permits flow of water when the tool contacts the surface and the water shut-off construction will function automatically to stop the flow of water when the cleaning implement is removed from the surface being cleaned.

The automatic water valve of the present invention includes a water inlet section and a water outlet section having a water conduit therethrough wherein the water from a source under pressure can be directed through the valve for direct application upon a work surface. In the preferred embodiment, the water inlet section can be provided with a conventional threaded connector for easy interconnection with a usual garden hose. The water inlet section terminates forwardly in a flexible

nozzle which is maintained in fluid-tight engagement within the rearward portion of the water outlet section.

The water inlet section connects to the water outlet section in a pivotal interconnection and is constructed to allow the nozzle to flex when the sections are pivoted relative to each other. The water inlet section includes an axial water conduit there-through and a valve chamber in fluid communication with the water conduit. A conically shaped flutter valve is freely movable within the valve chamber and is biased against a seat by the water under pressure to normally automatically prevent water from flowing through the water inlet section and through the water outlet section.

An operating rod is positioned within the flexible nozzle and has one end terminating at the valve chamber in position to contact the flutter valve. The other end of the operating rod abuts a circular barrier within the water outlet section. The operating rod is generally axially positioned and is fabricated of sufficient length to allow its inward end to extend into the valve chamber and rearwardly beyond the plane of the valve seat when the parts are pivoted. When the implement connected to the automatic water valve is not in use, the water under pressure will normally force the flutter valve toward its seat which will in turn cause the flutter valve to bias the inward end of the operating rod. Upon contacting the inward end of the operating rod, the flutter valve under pressure will cause the operating rod to pivot the water outlet section relative to the water inlet section until the flutter valve can rest upon and seal against the seat. Once the flutter valve is seated, there will be no further bias of the flutter valve upon the operating rod and no further tendency for the water outlet section to angularly pivot any further.

It is noteworthy that the pressure of the water continuously forces the flutter valve toward its seat to normally act as a shut-off to prevent water from flowing through the automatic water valve. When the implement that is connected to the automatic water valve is applied against a surface, the forces urging the implement against the surface will overcome the water pressure forces of the flutter valve against the end of the operating rod which normally causes the parts to pivot into the water shut off or axial aligned position. These forces will cause the inward end of the operating rod to enter into the valve chamber and thereby to force the flutter valve from its seat. With the parts so arranged, the internal water valve will then be open and water will flow freely from the hose, through the flutter valve, through the conduit in the water inlet section, and then through the communicating interior conduit of the water outlet section.

In the preferred embodiment of the invention, a

circular barrier is positioned within the interior cavity of the water outlet section in a manner to provide an abutment to be contacted by the forward end of the operating rod. The forward end of the operating rod preferably may be bent to facilitate operational contact with the abutment. The operating rod is operatively located within communicating water passages which are respectively provided in the water inlet section and the water outlet section of the automatic water valve and has its rearward end in contact with the flutter valve. By precisely defining the length of the operating rod to be slightly larger than the combined length of the communicating water passages when the water passages are axially aligned, the operation of the flutter valve and consequently the flow of water through the automatic water valve can be easily controlled. As above set forth, the water pressure upon the flutter valve will normally cause the operating rod to angularly cock the water outlet section of the automatic water valve about the pivot relative to the water inlet section to thereby provide sufficient clearance to allow the flutter valve to seat for positive water shut off.

It is therefore an object of the present invention to provide an improved automatic water valve of the type set forth.

It is another object of the present invention to provide a novel automatic water valve which comprises a water inlet section which may have an endward hose connection thereon, the water inlet section being provided with an axial water conduit, the water conduit terminating endwardly in a valve chamber and a water outlet section pivotally connected to the water inlet section, the water outlet section including a water conduit to receive water from the water inlet section, the water inlet section being provided with a flutter valve in the valve chamber to normally prevent water flow therethrough, and means to unseat the flutter valve automatically when the automatic valve is attached to an implement and that implement is applied to a surface to be treated.

It is another object of the present invention to provide a novel automatic water valve comprising water inlet means for directing water flow therethrough, water outlet means pivotally connected to the water inlet means to receive water from the water inlet means, valve means to normally prevent the flow of water from the water inlet means through the water outlet means and operating rod means within the water inlet means and the water outlet means to open the valve means when an implement connected water outlet means is applied against a surface to be treated.

It is another object of the present invention to provide a novel automatic water valve which includes a water inlet section and a water outlet

section pivotally connected together, the water inlet section and the water outlet section each having a water conduit therethrough, a normally closed valve means in the water inlet section water conduit to normally interrupt the flow of water through the automatic valve and valve operating means axially movable through the water inlet section and water outlet section, the valve operating means being adapted to open the valve means when an implement connected to the water outlet section is applied against a surface to be treated to automatically cause the flow of water.

It is another object of the present invention to provide a novel automatic water valve that is rugged in construction, automatic in operation and trouble-free when in use.

Other objects and a fuller understanding of the invention will be had by referring to the following description and claims of preferred embodiments thereof, taken in conjunction with the accompanying drawings, wherein like reference characters refer to similar parts throughout the several views and in which:

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a brush with a water shut-off valve in accordance with the present invention.

Fig. 2 is a side elevational view of the brush showing the parts in full lines in operating position and in broken lines in the water shut-off position.

Fig. 3 is a cross sectional view from the perspective of section line 3-3 on Fig. 5, looking in the direction of the drawings and showing the valve in its normally closed position.

Fig. 4 is a cross sectional view similar to Fig. 3, showing the arrangement of parts with the valve open.

Fig. 5 is a top plan view of the brush of Fig. 1.

Fig. 6 is an end elevational view of the brush from the perspective of section line 6-6 on Fig. 2.

Fig. 11 is a top plan view of a clearing implement with automatic water shut-off in accordance with the present invention.

Fig. 12 is a side elevational view of the cleaning implement of Fig. 11, showing a brush as the cleaning element.

Fig. 13 is a bottom plan of the cleaning implement, looking from line 3-3 on Fig. 12.

Fig. 14 is a bottom plan view similar to Fig. 13 showing a sponge as the cleaning element.

Fig. 15 is a cross sectional view taken along line 5-5 on Fig. 11, looking in the direction of the arrows, showing the arrangement of parts with the valve open.

Fig. 16 is a cross sectional view similar to Fig. 15, showing the arrangement of parts with the valve closed.

Fig. 17 is a side elevational view showing the cleaning element in use.

Fig. 18 is a side elevational view showing detergent being added to the cleaning implement.

Fig. 21 is a longitudinal cross sectional view of an automatic water valve in accordance with the present invention showing the arrangement of parts to allow water flow.

Fig. 22 is a longitudinal cross sectional view similar to Fig. 21 showing the arrangement of parts to prevent water flow.

Fig. 23 is an exploded, perspective view of the automatic water valve.

Fig. 24 is a perspective, one-quarter cut away view of the automatic water valve.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Although specific terms are used in the following description for the sake of clarity, these terms are intended to refer only to the particular structure of the invention selected for illustration in the drawings, and are not intended to define or limit the scope of the invention.

Referring now to the drawings, there is shown in Fig. 1 a novel brush 10 which comprises generally a handle portion 12 and a pivotally interconnecting body or brush portion 14. The handle portion 12 terminates rearwardly in a threaded socket 16 which is suitable for connection to the threaded end of a usual garden hose (not shown) in conventional manner.

As best seen in Figs. 3 and 4, the handle portion 12 is provided with an axial water conduit 20 to permit water flow therethrough in the direction indicated by the arrow 22. The conduit 20 extends from the threaded socket 16 and terminates forwardly in an open valve chamber 24, which chamber is intended to normally be filled with water under all conditions of use. The valve chamber terminates forwardly in a flat seat 26 of size and configuration to receive thereon a flutter valve 28 in sealing engagement. Preferably, the flutter valve is not connected within the valve chamber and is free to move therein between seated and unseated positions to control the flow of water through the brush. As illustrated in Fig. 4, when the brush 10 is not in use, water under pressure will impinge upon the loose flutter valve 28 and will force the valve through the valve chamber 24 until it presses upon and seals against the valve 26. When the flutter valve 28 is pressed against the seat 26, water flow through the brush

10 will be interrupted and this construction will function as an automatic shut-off, without requiring any attention on the part of the user.

Still referring to Figs. 3 and 4, the forward end 18 of the handle portion 12 is integrally formed with an extending nozzle 30 which projects interiorly of the brush portion 14. As shown, the brush portion 12 includes a cooperating, hollow conduit 32 to receive water under pressure from the handle portion 12. The handle portion nozzle 30 includes an interior water conveying bore or conduit 34, which conduit intercommunicates between the valve chamber 24 and the brush portion bore 32. As shown, the nozzle 30 is formed with a peripheral groove 36 to receive therein a rubber O-ring seal 38 or other suitable elastomeric type of sealing construction. The O-ring seal 38 bears against the inner periphery 40 of the brush portion conduit 32 to prevent any backflow or loss of water at the interconnection between the handle portion 12 and the brush portion 14 under all pivoted positions of use.

A pair of connecting lugs 42 forwardly project from the handle portion 12 below the nozzle 30 and into recesses provided in the body 68 of the body portion 14. A pivot pin 44 extends through the body 68 and the lugs 42 to allow limited pivotal movement between the handle portion 12 and the brush portion 14. As illustrated in Fig. 3, when the brush 10 is in its initial, unused condition, the handle portion 12 is normally angularly cocked relative to the brush portion 14 about the pivot pin 44. As previously set forth, the angularity is produced by end of the valve operating rod 46 contacting the flutter valve 28. With the parts angularly cocked as shown in Fig. 3, the valve seat 26 will be pivoted away from the rear of the operating rod 46 whereby the flutter valve 28 will be free to seal against the valve seat 26 under the impetus of the water pressure.

Still referring to Figs. 3 and 4, it will be seen that the valve operating rod 46 is axially moveable through the body portion water conduit 32. The operating rod may be fabricated of metal or hard plastic and is normally positioned so that its valve contact end 48 extends rearwardly beyond the seat 26 when parts are axially aligned as in Fig. 5. This forces the flutter valve 28 away from the seat 26, thereby allowing water to freely flow through the brush. The forward end 50 of the valve operating rod 46 is encapsulated within a plastic or other suitable material slide block 52 in a non-releasable interconnection, for example, by employing a suitable cement or by a friction fit. The slide block 52 is designed and configured to have limited axial movement within the interior of the brush portion hollow conduit 32. As shown, the slide block is provided with a peripheral groove 54 of known

construction and dimensions to receive and secure therein a suitable sealing element, for example, a conventional O-ring gasket 56. The gasket 56 seals the slide block 52 against the interior periphery 40 of the conduit 32 to prevent water leakage thereabout under all conditions and positions of use the slide block 52.

As shown in Figs. 3 and 4, and as additionally illustrated in Figs. 1, 2 and 5, the brush portion 14 is provided with an adjusting slot 58 which is angularly offset from the longitudinal axis of the brush to provide a camming action to adjust the axial position of the valve operating rod 46. An operating lever 60 extends from the slide block 52 and projects through the slot 58. The operating lever terminates exteriorly of the body 68 in a rounded knob 62. Referring Figs. 2 and 5 when the knob 62 is pushed to the right as indicated by the arrowhead 64 to its rearward position as indicated by the dotted line representation 62', the operating lever 60 will be urged rearwardly as it travels through the camming adjusting slot 58 to thereby force the slide block 52 and the attached valve operating rod 46 rearwardly relative to the brush portion 14. The rearward movement of the valve operating rod 46 will cause the valve contacting end 48 to enter further into the valve chamber 24, past the plane of the flat seat 26 to impinge upon the flutter valve 28 and to force the flutter valve away from the seat 26. Under this condition, water can be made to flow continuously through the brush 10 for application upon a car or other surface (not shown).

When the operating lever 60 is oppositely moved by urging the lever 60 through the adjusting slot 58 in the direction indicated by the arrowhead 66, the thumb knob 62 will take the position indicated in phantom lines 62" (Figs. 5 and 6) to thereby urge the operating lever 60 forwardly relative to the brush portion 14. In this position, the slide block 52 will be urged forwardly within the interior of the brush portion to thereby pull the valve operating rod 46 forwardly. When the slide block 52 is forwardly moved, the valve contacting end 48 will be caused to approach the plane of the flat valve seat 26, thereby allowing the flutter valve 28, under pressure from the impinging water (not shown) to more closely approach the seat. This will restrict flow through the valve to thereby control the volume of flow, without entirely shutting off the water flow.

When the parts are medially positioned as indicated in full lines in Figs. 3, 5 and 6, the geometry of the system is so designed that the handle portion 12 can pivot about the pivot pin 44 relative to the brush portion 14 to thereby pull the valve contacting end 48 forwardly of the plane of the valve seat 26. In this position, as previously men-

tioned, the flutter valve 28 will be pushed by the water pressure flush against the valve seat 26 to thereby positively close the valve and thereby shut off the flow of water through the brush 10. Only when the parts are pivoted about the pin 44, for example when the brush portion is applied against the surface to be cleaned, will the valve contacting end 48 push sufficiently against the flutter valve 28 to unseat the flutter valve and thereby permit water flow through the device.

Referring again to Figs. 3 and 4, the body or brush portion 14 is formed with a generally planar, hollow body 68 which is provided with a discharge opening or nozzle 70 which is in fluid communication with the hollow conduit 32 of the brush portion 14. Accordingly, when the flutter valve 28 is upset or forced off of its seat 26, water will flow through the handle portion 12 as indicated by the arrow 22, through the conduit 32 as indicated by the arrow 72 and through the discharge opening 70 as indicated by the arrow 74 to directly impinge upon the surface to be cleaned. A plurality of bristles 76 are secured within the brush body 68 in well known manner to provide a conventional cleaning assembly in a manner to dislodge dirt and other extraneous material from the surface to be cleaned (not shown) in a conventional manner.

A hollow liquid soap or detergent receiving reservoir 78 is formed in the body 68 and is provided with a fill opening 80 to receive therein a conventional liquid soap or detergent (not shown) to aid in the cleaning process. A closure cap 82 which preferably includes a snap-type closure 84, or perhaps a threaded interengagement is provided to facilitate the loading and storage of a liquid cleaning agent within the detergent reservoir 78. An internal weir 86 subdivides the detergent reservoir 78 to define a smaller soap discharge chamber 88. The weir 86 defines an upper soap passageway 90 between the top of the weir and the upper wall 92 of the brush body 68 so that by downwardly tilting the brush portion 14, liquid soap or detergent can be made to flow from the reservoir 78 into the soap discharge chamber 88.

As best seen in Figs. 3 and 4, the soap discharge chamber 88 is provided with a gravity soap discharge opening 94 whereby any soap which is allowed to spill over into the soap discharge chamber 88 can flow by gravity through the discharge opening 94, through the bristles 76 for direct application upon the surface being cleaned. An eccentric flow control stopper 96 is connected to a knob 98 whereby when the knob 98 is turned in the direction of the arrow 100 (Fig. 2), the eccentric stopper 96 can be readily adjusted relative to the discharge opening 94 to partially or fully obstruct the opening, thereby allowing a wide latitude of liquid soap or detergent flow discharge through the

discharge opening 94.

In use, a garden hose (not shown) should be connected to the threaded socket 16 in usual manner and water should be allowed to impinge upon the flutter valve 28. With the bristles 76 not in contact with any surface to be cleaned, the water under pressure will be sufficient to force the flutter valve 28 against the seat 26 in manner to contact the valve contacting end 48 of the operating rod 46. The water pressure will force the brush portion 14 and handle portion 12 to respectfully pivot about the pivot pin 44 relative to each other until the flutter valve 28 tightly seals upon the seat 26, thereby preventing water flow through the brush 10. In this condition, the handle portion 12 will be angularly cocked relative to the body or brush portion 14 in the manner illustrated in Fig. 3 and in broken lines in Fig. 2.

By contacting the surface to be cleaned with the bristles 76, the handle portion 12 and body or brush portion 14 will be pivoted about the pivot pin 44 to their aligned positions in the manner illustrated in Fig. 4 and in full lines in Fig. 2, thereby causing the valve contacting end 48 of the valve operating rod 46 to push against the flutter valve 28. This contact will force the flutter valve to leave its seat 26, whereby water will flow through the handle water conduit 20 as indicated by the arrow 22 (Fig. 4), through the valve chamber 24 as indicated by the arrow 102, through the nozzle bore 34 as indicated by the arrow 104, through the body portion conduit 32 as indicated by the arrow 72 and through the discharge opening or nozzle 70 as indicated by the arrow 74 for direct impingement upon the surface to be cleaned. To stop the flow of water, all that need be done is to remove the bristles 76 from contact with the surface being cleaned, whereby the water pressure will again force the flutter valve 28 against its seat 26. Continuous flow of water through the brush 10 can be achieved by urging the operating lever 60 to the right or rearwardly along the adjusting slot or groove 58 to a position whereby the valve contacting end 48 will always upset the flutter valve to thereby assure continuous water flow. See the broken line position 62' in Figs. 5 and 6. To adjust the volume of flow, the operating lever 60 can be moved to the left as viewed in Fig. 6 in the direction of the arrow 66 until the thumb knob reaches the dotted line position 62" as indicated in broken lines in Figs. 5 and 6.

Referring now to the drawings, there is shown in Fig. 11 a novel cleaning element 10 which comprises generally a handle portion 12 and a pivotally interconnected body portion 14. The handle portion 12 terminates rearwardly in a threaded socket 16 which is suitable for connection to the threaded end of a usual garden hose (not shown) in conven-

usual manner.

As best seen in Figs. 15 and 16, the handle portion 12 is provided with an axial water conduit 20 to permit water flow therethrough in the direction indicated by the arrow 22. The conduit 20 is in fluid communication with the threaded socket 16 and terminates rearwardly in a valve chamber 24, which chamber is intended to normally be filled with water under all conditions of use. The valve chamber 24 terminates forwardly in a circular, planar seat 26 of size and configuration to receive thereon a flutter valve 28 in sealing engagement. Preferably, the flutter valve 28 is not connected within the valve chamber 24 and is free to move therein between seated and unseated positions to control the flow of water through the cleaning implement 10.

As illustrated in Fig. 16, when the cleaning implement 10 is not in use, water under pressure will impinge upon the loose flutter valve 28 and will force the valve through the valve chamber 24 until it presses upon and seals against the valve seat 26. When the flutter valve 28 is pressed against the seat 26, water flow through the brush 10 will be interrupted and this construction will function as an automatic shut-off, without requiring any attention on the part of the user.

Still referring to Figs. 15 and 16, the forward end 18 of the handle portion 12 is integrally formed with an extending nozzle 30 which projects interiorly of the body portion 14. As shown, the body portion 14 includes a cooperating, hollow conduit 32 to receive water under pressure from the handle portion 12. The handle portion nozzle 30 includes an interior water conveying bore or conduit 34, which conduit forms an extension of the handle portion conduit 20 and intercommunicates between the valve chamber 24 and the body portion bore 32. As shown, the nozzle 30 is formed with a peripheral groove 36 to receive therein a rubber O-ring seal 38 or other suitable elastomeric type of sealing construction. The O-ring seal 38 bears against the inner periphery 40 of the body portion conduit 32 to prevent any backflow or loss of water at the interconnection between the handle portion 12 and the body portion 14 under all pivoted positions of use.

A pair of connecting lugs 42 forwardly project from the handle portion 12 below the water conduit 20 and into recesses provided in the body 68 of the body portion 14. A pivot pin 44 extends through the body 68 and the lugs 42 to allow limited pivotal movement between the handle portion 12 and the brush portion 14. As illustrated in Fig. 6, when the cleaning implement 10 is in its initial, unused condition, the handle portion 12 is normally angularly cocked relative to the body portion 14 about the pivot pin 44. As previously set forth, the angularity

is produced by the rearward end 52 of the valve operating rod 46 contacting the flutter valve 28. Water pressure upon the flutter valve 28 will urge the flutter valve 28 tightly against its seat 26. This will result in automatic water shut-off inasmuch as the water conduit 20 will be isolated from water introduced at the threaded socket 16 by the flutter valve 28. Additionally, the action of the water pressure upon the flutter valve will cause the flutter valve 28 to urge the operating rod 46 forwardly. The interaction of the operating rod forward end 54 against the stationary barrier 56 will cause the body portion 14 to pivot about the pin 44. With the parts angularly cocked as shown in Fig. 16, the valve seat 26 will be pivoted away from the rear of the operating rod 46 wherein the flutter valve 28 will be free to seal against the valve seat 26 under the impetus of the water pressure.

Still referring to Figs. 15 and 16, it will be seen that the valve operating rod 46 is free to be axially moveable through the body portion water conduit 32. The operating rod may be fabricated of metal or hard plastic and is normally positioned so that its valve contact or rearward end 52 extends rearwardly beyond the seat 26 when parts are axially aligned as in Fig. 15. This forces the flutter valve 28 away from the seat 26, thereby allowing water to freely flow through the brush. The forward end 54 of the valve operating rod 46 abuts against the barrier 56 which is interiorly provided in the body portion 14 to thereby positively limit the forward travel of the operating rod 46 within the aligned water passage conduits 20, 34 and 32. When the cleaning implement 10 is not applied against a surface to be cleaned, the forward pressure of the flutter valve 28 upon the operating rod 46 will be sufficient to angularly move the body portion 14 about the pivot pin 44 relative to the handle portion 12 to allow the flutter valve 28 to seal upon its seat 26, thereby automatically stopping the flow of water.

When the body portion 14 is employed for cleaning purposes by applying either the brush 48 (Figs. 12,13) or the sponge 50 (Fig. 14) against the surface to be cleaned, the application forces will easily be sufficient to overcome the impetus of the water pressure upon the flutter valve 28. This will cause the body portion 14 to pivot in a clockwise direction relative to the handle portion 12 about the pivot pin 44 until the rear wall 58 of the body portion 14 abuts and stops against the forward flange 60 of the handle portion 12. With the parts in this position, as illustrated in Fig. 5, the conduits 20, 32, 34 will all be in axial alignment and the barrier 56 will be pivoted to its closest possible position to the valve seat 26. Accordingly, the barrier 56 will urge the operating rod 46 to its rearwardmost position whereby the rearward end 52 of the

operating rod will be pushed rearwardly past the plane of the valve seat 26. The operating rod will thereby automatically force the flutter valve 28 from the seat, thus causing automatic flow of water through the cleaning implement. Under this condition, water can be made to flow continuously through the cleaning implement 10 for application upon a car or other surface (not shown). It is noteworthy that the removal of the brush 48 or sponge 50 from the surface being cleansed will allow the water pressure upon the flutter valve 28 to forwardly urge the operating rod 46, thereby causing counter-clockwise rotation of the body portion 14 relative to the handle portion 12 about the pivot pin 44. See Fig.16. In this condition, the rearward end 52 of the operating rod will be urged forwardly of the plane of the valve seat 26, thereby allowing the flutter valve 28 to contact the valve seat 26 to automatically stop water flow.

It is a feature of this invention to provide an interchangeable brush 48 or sponge 50 for use with the body portion 14, depending upon the nature of the surface to be cleaned. In the illustrated embodiment, the brush portion 14 is provided with a depending skirt 84 to removably receive thereon a tight-fitting, peripheral flange 92 which can be cooperatively formed in the brush 48 or sponge 50. In this manner, either the brush 48 or sponge 50 can be easily removable affixed to the body portion 14. Preferably a pull tab or similar construction can be provided with the sponge 50 to facilitate separating the sponge flange 92 from the body portion depending skirt 84. Alternatively, other separable fasteners, for example, "VELCRO" type fasteners can be employed to removably secure a brush 48 or sponge 50 to the body 68.

Referring still to Figs. 15 and 16, the body or brush portion 14 is formed with a generally hollow body 68 having a convenient handle 62 formed therein. The body 68 is provided with a discharge opening or nozzle 70 which is in fluid communication with the hollow conduit 32 of the brush portion 14 through an axially aligned opening and a directional chamber 68. Accordingly, when the flutter valve 28 is upset or forced off of its seat 26, water will flow through the handle portion 12 as indicated by the arrow 22, through the conduit 32, through the opening 64 and directional chamber 68 and then through the discharge opening or nozzle 70 to directly impinge upon the surface to be cleaned. The water (not indicated) under pressure will change direction within the directional chamber 66 without significant loss of pressure to thereby exit the nozzle 70 as a stream.

A hollow liquid soap or detergent receiving reservoir 78 is formed in the body 68 and is provided with a fill opening 80 to receive therein a conventional liquid soap or detergent (not shown)

to aid in the cleaning process. An internal weir 86 subdivides the detergent reservoir 78 to the define a smaller soap discharge chamber 88. The weir 86 defines an upper soap passageway 90 between the top of the weir and the upper wall 72 of the brush body 68 so that by downwardly tilting the brush portion 14, liquid soap or detergent can be made to flow from the reservoir 78 into the soap discharge chamber 88. The soap discharge chamber 88 is provided with a gravity soap discharge opening 76 whereby any soap which is allowed to spill over into the soap discharge chamber 88 can flow by gravity through the discharge opening 76 and thence through the brush 48 or sponge 50 for direct application upon the surface being cleaned.

In use, a garden hose 82 connected to the threaded socket 16 in usual manner and water under pressure impinges upon the flutter valve 28. With the brush 48 or sponge 50 not in contact with any surface to be cleaned, the water under pressure will be sufficient to force the flutter valve 28 against the seat 26 in manner to contact the valve contacting end 48 of the operating rod 46. The water pressure will force the body portion 14 and handle portion 12 to respectfully pivot about the pivot pin 44 relative to each other until the flutter valve 28 tightly seals upon the seat 26, thereby preventing water flow through the brush 10. In this condition, the handle portion 12 will be angularly clocked relative to the body or brush portion 14 in the manner illustrated in Fig.15.

By contacting the surface to be cleaned with the bristles 76, the handle portion 12 and body or brush portion 14 will be pivoted about the pivot pin 44 to their aligned positions in the manner illustrated in Fig. 6, thereby causing the valve contacting end 52 of the valve operating rod 46 to push against the flutter valve 28. This contact will force the flutter valve to leave its seat 26, whereby water will flow through the handle water conduit 20 as indicated by the arrow 22 (Fig. 15) for direct impingement upon the surface to be cleaned. To stop the flow of water, all that need be done is to remove the brush or sponge from contact with the surface being cleaned, whereby the water pressure will again force the flutter valve 28 against its seat 26. As shown in Fig. 17, continuous flow of water through the cleaning implement 10 can be achieved by grasping the handle portion 12 with one hand and the handle 62 of the body portion 14 with the other hand and then manually pulling the parts to the axially aligned position of Fig. 15. In this position, as hereinbefore set forth, the flutter valve 28 will be formed from its seat 26 to thereby assure continuous water flow.

Referring now to the drawings, there is shown in Figs.21 and 22 a novel automatic water valve 10 which comprises generally a water inlet section 12

and a pivotally interconnected water outlet section 14. The water inlet section 12 may terminate rearwardly in a threaded socket or hose connection which is suitable for connection to the threaded end of a usual garden hose (not shown) in conventional manner.

Still referring to Figs.21 and 22 and further considering Figs.23 and 24, the water inlet section 12 is provided with an axial water conduit 20 to permit water flow therethrough in the direction indicated by the arrow 22. The conduit 20 is in fluid communication with the water inlet end, which may be a threaded hose connection(not shown) and terminates forwardly in a valve chamber 24, which chamber is intended to normally be flooded with water under all conditions of use. The valve chamber 24 terminates forwardly in a circular, planar seat 26 of size and configuration to receive thereon a flutter valve 28 in sealing engagement. Preferably, the flutter valve 28 is conical in configuration and is free to move within the valve chamber 24. As shown, the flutter valve freely moves within the confines of the valve chamber between seated and unseated positions to control the flow of water through the automatic water valve 10 and to cause a pulsating effect at the water outlet as indicated by the outlet arrow 72.(Fig.21).

As illustrated in Fig.22 when the automatic valve 10 is not in use, water under pressure will impinge upon the loose flutter valve 28 and will force the valve in the direction of water flow through the valve chamber 24 until it presses upon the seals against the valve seat 26. When the flutter valve 28 is pressed against the seat 26, water flow through the automatic water valve 10 will be interrupted and this construction will function as an automatic shut-off, without requiring any attention on the part of the user.

Still referring to Figs.21 and 22, the forward end of the water inlet section 12 is integrally formed with a forwardly extending nozzle 30, which nozzle projects interiorly of the water outlet section 14. As shown, the water outlet section 14 comprises a cooperating, hollow conduit 32 to receive water under pressure from the water inlet section 12. The water inlet section nozzle 30 includes an interior water conveying bore or conduit 34, which conduit forms an extension of the water inlet section conduit 20 and intercommunicates between the valve chamber 24 and the water outlet section bore or conduit 32. As shown, the nozzle 30 is formed with a peripheral groove 36 to receive therein a rubber O-ring seal 38 or other suitable elastomeric type of sealing construction. The O-ring seal or gasket 38 bears against the inner periphery 40 of the water outlet section conduit 32 to prevent any backflow or loss of water at the interconnection between the water inlet section 12 and the water

outlet section 14 under all pivoted positions of use.

A first pivot lug 42 projects from the outer periphery of the water inlet section 12 below the valve chamber 24 and cooperates with a second pivot lug 44 which projects from the outer periphery of the water outlet section 14. A pivot pin 18 extends through aligned openings 48, 50 respectively provided in the first and second lugs 42, 44 to allow limited pivotal movement between the water inlet section 12 and the water outlet section 14. As illustrated in Fig.22 when the automatic water valve 10 is in its initial, unused condition, the water outlet section 14 will normally be angularly positioned relative to the water inlet section 12 about the pivot pin 18 to straighten the nozzle 30 to its longest possible extent. As previously set forth, the angularity is produced by the contact between the rearward end 52 of the valve operating rod 46 and the flutter valve 28 which in turn causes forward movement of the operating rod and consequent pivoting of the water outlet section 14.

Water pressure from the water source is applied directly upon the conically-shaped surface 74 of the flutter valve 28 and this functions to urge the flutter valve 28 toward and tightly against its seat 26. This flutter valve movement will result in automatic water shut-off inasmuch as the water conduit 34 within the nozzle 30 will be isolated from water introduced at the water inlet end of the water inlet section 12 by the flutter valve 28 as it seals against its seat 26. Additionally, the action of the water pressure upon the flutter valve will force the flutter valve forwardly within the valve chamber 24, thereby causing the flutter valve 28 to urge the operating rod 46 forwardly. The interaction of the operating rod bent forward end 54 against the stationary circular barrier 56 formed in the water outlet section 14 will cause the water outlet section 14 to pivot relative to the water inlet section 12 about the pin 18. With the parts positioned as shown in Fig.22, the valve seat 26 will be pivoted as far away from the rear of the abutment 56 as possible and the additional linear distance thus provided will enable the flutter valve 28 to seal against the valve seat 26 under the impetus of the water pressure.

Still referring to Figs.21 and 22, it will be seen that the valve operating rod 46 is free to be movable within the water outlet section water conduit 32. The operating rod 46 may be fabricated of metal or hard plastic and is normally positioned so that its valve contact or rearward end 52 extends rearwardly beyond the seat 26 when the nozzle 30 is bent as illustrated Fig.21. This shortening of the nozzle 30 causes the operating rod 46 to force the flutter valve 28 away from the seat 26, thereby allowing water to freely flow through the automatic water valve 10 as indicated by the arrows 22, 76, 70, 72. The forward end 54 of the valve operating

rod 46 is preferably bent at right angles to the axis of the rod and abuts against the stationary circular abutment or barrier 56 which is interiorly positioned in the water outlet section 14 to thereby positively limit the forward travel of the operating rod 46 within the communicating water passage conduits 20, 34 and 32. When the implement (not shown) which is connected to the automatic water valve 10 is not applied against a surface to be treated, the forward pressure of the flutter valve 28 upon the rearward end 52 of the operating rod 46 will be sufficient to cause the operating rod bent end 54, acting through the stationary barrier 56, to angularly move the water outlet section 14 about the pivot pin 18 relative to water inlet section 12 until the nozzle 30 is axially aligned. This allows the flutter valve 28 to coal upon its seal 26, thereby automatically stopping the flow of water. See Fig.22.

As best seen in Figs.21, 22 and 23, the nozzle 30 is provided with a rearward connector 64 having connecting threads 62 to facilitate assembly with the conduit portion 78 and to provide easy access to the flutter valve 28. The nozzle 30 terminates forwardly in an enlarged sealing block 66 of dimensions to slide within the interior bore which defines the hollow conduit 32. The sealing block 66 is machined or otherwise treated to form a circumferential groove 36 within which is positioned the O-ring gasket 38 for sealing engagement upon the inner peripheral surface 40 of the conduit 32. As shown in Fig.21, the narrow neck 60 of the nozzle 30 is designed and intended to slightly bend or flex as necessary to allow the water inlet and outlet sections 12, 14 to pivot about the pin 18 between water flow and water shut-off positions.

Accordingly, the barrier 56 will urge the operating rod 46 to its rearwardmost position when the parts are pivoted to bend the nozzle 30 whereby the rearward end 52 of the operating rod will be pushed rearwardly past the plane of the valve seat 26. The operating rod will thereby automatically force the flutter valve 28 from the seat 26, thus causing automatic flow of water through the automatic water valve. Under this condition, water can be made to flow continuously through the valve 10 for introduction to an implement (not shown) such as a fountain brush. It is noteworthy that the removal of the implement from the surface being treated will allow the water pressure, acting upon the flutter valve 28 to forwardly urge the operating rod 46, thereby causing counter-clockwise rotation of the water outlet section 14 relative to the water inlet section 12 about the pivot pin 18. In this condition, the rearward end 52 of the operating rod 46 will be urged forwardly of the plane of the valve seat 26, thereby allowing the flutter valve 28 to contact the valve seat 26 to automatically stop

water flow.

When the flutter valve 28 is upset or forced off of its seat 26, water will flow through the water inlet portion 12 as indicated by the arrow 22, through the valve seat 26 as indicated by the arrow 76, through the nozzle bore 34, through the conduit 32, through the concentric opening 58 provided in the barrier 56 as indicated by the arrow 70 and through the discharge conduit 68 of the water outlet section 14 as indicated by the arrow 72. It is intended that the water outlet section 14 will be attached to a water using implement, such as a brush (not shown) and accordingly, the water discharged through the discharge conduit 68 will be introduced directly into any such water using implement.

In use, a garden hose (not shown) is connected to the water inlet end of the water inlet section 12 in usual manner and water under pressure impinges upon the flutter valve 28. With the implement (not shown) that is connected to the water outlet section 14 not in contact with any surface to be treated, the water under pressure will be sufficient to force the flutter valve 28 against the seat 26 in manner to both contact and forwardly move the rearward end 52 of the operating rod 46 and to stop the flow of water. The water pressure will force the water outlet section 14 to pivot about the pivot pin 18 relative to the water inlet section 12 until the flutter valve 28 tightly seals upon the seat 26, thereby preventing water flow through the device 10. In this condition, the water outlet section nozzle 30 will be axially aligned with the remainder of the water inlet section 12 in the manner illustrated in Fig. 2.

By contacting a surface to be treated (not shown) with an implement (also not shown) connected to the water outlet section 14, the water outlet section 14 will be pivoted about the pivot pin 18 bend the flexible nozzle of the water inlet section 12 in the manner illustrated in Fig.21, thereby causing the valve contacting end 52 of the valve operating rod 46 to push against the flutter valve 28. This contact will force the flutter valve to leave its seat 26, whereby water will flow through the automatic water valve 10, as indicated by the arrows 22, 76, 70, 72 for impingement upon the surface to be treated. To stop the flow of water, all that need be done is to remove the implement (not shown) from contact with the surface being treated (also not shown), whereby the water pressure will again force the flutter valve 28 against its seat 26.

It should be noted that the features of the embodiments are interchangeable. For instance, the valve of Figures 21 onwards may be employed in either of the previous implements. Also, the brush of the first embodiment may be detachable and replaced by a sponge or other cleaning means.

It may also be noted that a cleaning implement may be provided with a plurality of cleaning means which can be supplied with liquid as required, such as a brush and a sponge.

Although the invention has been described with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention. Thus, the scope of the invention should not be limited by the foregoing specification, but rather, only by the scope of the claims appended hereto.

Features which are not part of the claims given at the end of the specification, but which fall within the scope of the claims and are preferred features, are given in the following paragraphs:

1. A brush with automatic shut-off comprising:

a handle portion having a rearward end and a forward end, the handle portion being adapted to be connected to a source of water under pressure, the handle portion having a water conduit therethrough, the water conduit terminating at the forward end in a valve chamber, the valve chamber having a seat;

a valve means positioned in the valve chamber to control water flow, the valve means being continuously biased toward the seat by the water under pressure;

the valve means being adapted to prevent the flow of water through the valve chamber when the valve means is in contact with the seat;

a body portion connected to the handle portion, the body portion being provided with a fluid conduit to receive water flow through the valve chamber and a discharge nozzle to direct the flow of water outwardly of the brush;

operating means positioned within the body portion and being movable between forward and rearward positions to optionally contact the valve means, the valve means being forced away from the seat when contacted by the operating means to cause water flow; and

a plurality of bristles secured in the body portion to facilitate cleaning when the brush is in use.

2. The brush of paragraph 1 wherein the valve means is not connected within the valve chamber.

3. The brush of paragraph 2 wherein the valve means comprises a flutter valve.

4. The brush of paragraph 1 wherein the body portion and the handle portion are pivotally interconnected.

5. The brush of paragraph 4 wherein the body portion and the handle portion are pivotally respectively movable between a first, axially aligned position wherein water is permitted to flow through the valve chamber and a second, non-axially aligned position wherein no water is permitted to flow through the valve chamber.

6. The brush of paragraph 5 wherein the valve means contacts the said seat when body and handle portions are moved to the second, non-axially aligned position.

7. The brush of paragraph 5 wherein the operating means contacts the valve means to force the valve means away from the seat when the body and handle portions are moved to the first, axially aligned position.

8. The brush of paragraph 7 wherein the operating means comprises a valve operating rod and means to move the valve operating rod relative to the body portion.

9. The brush of paragraph 8 wherein the means to move comprise a slide block in movable relationship within the body and wherein the valve operating rod is secured to the slide block.

10. The brush of paragraph 9 wherein the means to move comprises an operating lever extending from the slide block, the operating lever extending through the body portion fluid conduit and exteriorly of the body portion.

11. The brush of paragraph 10 wherein the body portion is provided with an adjusting slot and wherein the operating lever projects into and is movable with the adjusting slot.

12. The brush of paragraph 11 wherein the body portion has a longitudinal axis and wherein the adjusting slot is angularly orientated relative to the adjusting slot.

13. The brush of paragraph 11 and seal means in the slide block to prevent water from the body portion fluid conduit from reaching the adjusting slot.

14. The brush of paragraph 5 and a nozzle projecting from the handle portion forwardly of the valve chamber, the nozzle having a conduit therethrough, the conduit communicating between the valve chamber and the hollow conduit of the body portion, the nozzle being positioned within the said body portion hollow conduit.

15. The brush of paragraph 14 wherein the nozzle is provided with a peripheral seal, the peripheral seal peripherally contacting the body portion hollow conduit to prevent the escape of water between the nozzle and the body portion hollow conduit in all pivotally moved positions of the body and handle portions.

16. The brush of paragraph 1 and a detergent reservoir provided in the body portion above the bristles.

17. The brush of paragraph 16 wherein a weir subdivides the reservoir to define a detergent discharge chamber and a detergent storage chamber.

18. The brush of paragraph 17 wherein there is no discharge opening provided for the detergent storage chamber.

19. The brush of paragraph 17 wherein the detergent discharge chamber is provided with a discharge opening to permit detergent to exit the body portion.

20. The brush of paragraph 19 and a movable flow control stopped overfitting the discharge opening, the flow control stopper being adapted to be moved relative to the discharge opening to vary the quantity of flow through the discharge opening.

21. A cleaning element with automatic water shut-off comprising:

a handle portion having a rearward end and a forward end, the handle portion being adapted to be connected at its rearward end to a source of water under pressure,

the handle portion having a water conduit therethrough,

the water conduit terminating at one end in a valve chamber, the valve chamber comprising a planar seat;

a valve means positioned in the valve chamber to control water flow, the valve means being continuously biased toward the seat by the water under pressure,

the valve means being adapted to prevent the flow of water through the valve chamber when the valve means is in contact with the seat and to permit water flow when the valve means is not in contact with the seat;

a body portion connected to the handle portion and being pivotal between a first position and a second position,

the body portion being provided with an interior barrier and with a hollow conduit in fluid communication with the water conduit and an interconnected discharge nozzle to direct the flow of water outwardly of the body portion,

the body portion hollow conduit being adapted to receive water from the handle portion water conduit when the body portion is pivoted to its said first position and not to receive water when the body portion is pivoted to its second position;

operating rod means positioned within the body portion and the handle portion, the operating rod means being in contact with the valve means and with the barrier of the body portion,

the operating rod means forcing the valve means away from the seat when

the body means is pivoted to the said first position to cause water flow; and a cleaning element secured to the body portion to facilitate cleaning when the cleaning implement is in use.

22. The cleaning implement of paragraph 21 wherein the valve means is not connected within the valve chamber.

23. The cleaning implement of paragraph 21 wherein the valve means comprises a flutter valve.

24. The cleaning implement of paragraph 23 wherein the body portion and the handle portion are in axially aligned relation when in the said first position wherein water is permitted to flow through the valve chamber and the body portion and the handle portion are in non-axially aligned relation when in the second position whereby no water is permitted to flow through the valve chamber.

25. The cleaning implement of paragraph 21 wherein the operating rod means comprises an elongate operating rod and wherein the barrier is spaced from the seat by a first distance when the body portion is in its said first position and by a second, longer distance when the body portion is in its second position.

26. The cleaning implement of paragraph 25 wherein the operating rod is shorter in length than the said second, longer distance.

27. The cleaning implement of paragraph 26 wherein the operating rod is longer in length than the said first distance.

28. The cleaning implement of paragraph 21 and a nozzle projecting forwardly from the handle portion forwardly of the valve chamber, the nozzle having a conduit therethrough, the conduit communicating between the valve chamber and the hollow conduit of the body portion, the nozzle being positioned within the said body portion hollow conduit.

29. The cleaning implement of paragraph 28 wherein the nozzle is provided with a peripheral seal, the peripheral seal peripherally contacting the body portion hollow conduit to prevent the escape of water between the nozzle and the body portion hollow conduit in all pivotally moved positions of the body and handle portions.

30. The cleaning implement of paragraph 21 and a detergent reservoir provided in the body portion above the cleaning element.

31. The cleaning implement of paragraph 30 and a weir provided in the reservoir, the weir subdividing the reservoir to define a detergent discharge chamber and a detergent storage chamber.

32. The cleaning implement of paragraph 31 wherein there is no discharge opening provided for the detergent storage chamber.

33. The cleaning implement of paragraph 32, wherein the detergent discharge chamber is provided with a discharge opening to permit detergent to exit the body portion.

34. The cleaning implement of paragraph 31, wherein the cleaning element is releasably secured to the body portion.

35. The cleaning implement of paragraph 34 wherein the body portion comprises a depending skirt and the cleaning element comprises a peripheral flange, the flange interacting with the skirt to provide the releasable securing.

36. The cleaning implement of paragraph 35, wherein the cleaning element is a sponge.

37. The cleaning implement of paragraph 36 and a tab extending from the peripheral flange, the tab extending in length a sufficient distance to facilitate grasping to remove the sponge from the body portion.

38. In a cleaning implement of the type having a handle portion adapted to be secured to a source of water through a threaded socket, the handle portion being provided with a water conduit to conduct water from the source to a cleaning element, the improvement comprising a valve chamber formed in the handle portion in fluid communication with the water conduit,

the valve chamber including a seat defining a plane; a valve means positioned in the valve chamber and being movable therewithin;

the valve means being continuously urged towards the seat by the water from the source;

operating rod means positioned within the handle portion and contacting the valve means,

the operating rod means being movable between a first position wherein the operating rod means is positioned entirely forwardly of the plane of the seat and a second position wherein a rearward portion of the operating rod means intersects the plane of the seat; and

a body portion movably secured to the handle portion,

the body portion being provided with a barrier positioned to be in contact with a forward portion of the operating rod means,

the body portion being movable between a first position when the operating rod means is moved to its said first position and a second position wherein the barrier moves the operating rod means to its said second position.

the said rearward end of the operating rod means contacting and forcing the valve means away from the seat when

the body portion is moved to the said second position;

whereby the valve means seats upon the seat to prevent the flow of water when the operating rod means is in its said first position and the valve means is forced away from the seat when the operating rod means is in its said second position to allow the flow of water from the source through the water conduit.

39. The cleaning implement of paragraph 38 wherein the handle portion terminates forwardly in a nozzle and the body portion is provided with a hollow conduit to receive the nozzle in a circular junction, the circular junction being provided with a circular seal to prevent leakage of water from the body portion hollow conduit during all operative positions of the body portion.

40. The cleaning implement of paragraph 39 wherein the handle portion nozzle is flexible and wherein the nozzle is bent when the body portion is moved to the said first position

41. The cleaning implement of paragraph 40 wherein the said barrier is spaced from the plane of the seat by a first distance when the body portion is moved to its first position and wherein the barrier is spaced from the plane of the seat by a second distance when the body portion is moved to its second position, the first distance being greater than the second distance.

42. The cleaning implement of paragraph 41 wherein the operating rod means is fabricated of a length that is greater than the said second distance.

43. A brush with automatic shut-off comprising:

a handle portion having a rearward end and a forward end, the handle portion being adapted to be connected to a source of water under pressure,

the handle portion having a water conduit therethrough, the water conduit terminating at the forward end in a valve chamber, the valve chamber having a seat; a nozzle projecting from the handle portion forwardly of the valve chamber and having a nozzle conduit therethrough adapted to communicate with said valve chamber;

a valve means position in the valve chamber to control water flow, the valve means being continuously biased toward the seat by the water under pressure;

the valve means being adapted to prevent the flow of water through the valve chamber when the valve means is in contact with the seat;

a body portion pivotally connected to the handle portion, the body portion being provided with a fluid conduit partially defined by a conduit body section to receive water flow through the valve chamber and a discharge nozzle to direct the flow of water outwardly of the brush;

operating means positioned within the body portion and being movable between forward and rearward positions to optionally contact the valve means dependent upon the pivotal position of said body portion with respect to said handle portion,

the valve means being forced away from the seat when contacted by the operating means to cause water flow; and

said nozzle including means for sealing that extends into and contacts said conduit body section, said means for sealing adapted to seal the water in the nozzle conduit and the fluid conduit in all pivotally moved positions of the body and handle portions; and

a plurality of bristles secured in the body portion to facilitate cleaning when the brush is in use.

51. An automatic water valve comprising: a water inlet section having a rearward end and a forward end, the water inlet section being adapted to be connected at its rearward end to a source of water under pressure,

the water inlet section comprising a conduit portion and a nozzle portion, the water inlet section having a water conduit therethrough, the water conduit comprising a valve chamber, the valve chamber comprising a planar seat, the nozzle portion comprising a neck and a peripheral sealing means to prevent the flow of water thereabout;

a valve means positioned in the valve chamber to control water flow, the valve means being continuously biased toward the seat by the water under pressure,

the valve means being adapted to prevent the flow of water through the valve chamber when the valve means is in contact with the seat and to permit the flow of water when the valve means is not in contact with the seat;

a water outlet section pivotally connected to the water inlet section and being pivotal between a first position and a second position,

the water outlet section being provided with an interior barrier and with a hollow conduit in fluid communication with the water conduit of the water inlet section, the hollow conduit receiving the said nozzle portion therewithin in a water-tight engagement, the water outlet section hollow conduit

being adapted to receive water from the water inlet section water conduit when the water outlet section is pivoted to its said first position and not to receive water when the water outlet section is pivoted to its second position; and

operating rod means positioned partly within the water inlet section and partly within the water outlet section, the operating rod means being in contact with the valve means and with the barrier of the water outlet section,

the operating rod means forcing the valve means away from the seat when the water outlet section is pivoted to the said first position to cause water flow.

52. The valve of claim 51 wherein the valve means is not connected to the operating rod means.

53. The valve of claim 51 wherein the valve means comprises a flutter valve.

54. The valve of claim 53 wherein the water inlet section and the water outlet section are in non-axially aligned relation when in the said first position wherein water is permitted to flow through the valve chamber and the water inlet section and the water outlet section are in axially aligned relation when in the second position whereby no water is permitted to flow through the valve chamber.

55. The valve of claim 51 wherein the operating rod means comprises an elongate operating rod and wherein the barrier is spaced from the seat by a first distance when the water outlet section is in its said first position and by a second, shorter distance when the water outlet section is in its second position.

56. The valve of claim 55 wherein the operating rod is longer in length than the said second, shorter distance.

57. The valve of claim 56 wherein the operating rod is longer in length than the said first distance.

58. The valve of claim 51 wherein the nozzle portion comprises a conduit therethrough, the conduit communicating between the valve chamber and the hollow conduit of the water outlet section, the nozzle sealing means engaging and peripherally sealing against the said hollow conduit.

59. The valve of claim 58 wherein the nozzle neck is flexible.

60. The valve of claim 59 wherein the nozzle neck is maintained in axial alignment with the axis of the water outlet section when the water outlet section is pivoted to its said second position.

61. The valve of claim 60 wherein the nozzle neck is bent away from axial alignment with axis of the water inlet section when the water outlet section is pivoted to its said first position.

62. The valve of claim 58 wherein the peripheral sealing means in the nozzle comprises a peripheral groove and an O-ring gasket positioned within the groove.

63. In an automatic water valve of the type having a water inlet section adapted to be secured to a source of water, the water inlet section being provided with a water conduit to receive and conduct water from the source, the improvement comprising

a valve chamber formed in the water inlet section in fluid communication with the water conduit,

the valve chamber including a seat defining a plane;

a valve means positioned in the valve chamber and being movable therewithin;

the valve means being continuously urged towards the seat by the water from the source;

a nozzle connected to the water inlet section and being in fluid communication with the water conduit and the valve chamber;

operating rod means positioned partially within the water inlet section and contacting the valve means, the operating rod means being movable between a second position wherein the operating rod means is positioned entirely forwardly of the plane of the seat and a first position wherein a rearward portion of the operating rod means intersects the plane of the seat; and

a water outlet section movably secured to the water inlet section,

the water outlet section being provided with hollow conduit and a barrier positioned in the hollow conduit to be in contact with a forward portion of the operating rod means,

the said nozzle being positioned within the hollow conduit of the water outlet section,

the water outlet section being movable between a second position when the operating rod means is moved to its said second position and a first position wherein the barrier moves the operating rod means to its said first position, the said rearward end of the operating rod means contacting and forcing the valve means away from the seat when the water outlet section is moved to the

said second position;

whereby the valve means upon the seat to prevent the flow of water when the operating rod means is in its said second position and the valve means is forced away from the seat when the operating rod means is in its said first position to allow the flow of water from the source through the water conduit.

64. The valve of claim 63 wherein the hollow conduit receives the said nozzle in a circular junction, the circular junction being provided with a circular seal to prevent leakage of water between the water inlet section and the water outlet section during all operative positions of the water outlet section.

65. The valve of claim 63 wherein the nozzle is flexible and wherein the nozzle is bent when the water outlet section is moved to the said first position.

66. The valve of claim 65 wherein the said barrier is spaced from the plane of the seat by a second distance when the water outlet section is moved to its second position and wherein the barrier is spaced from the plane of the seat by a first distance when the water outlet section is moved to its second position, the second distance being less than the first distance.

67. The valve of claim 66 wherein the operating rod means is fabricated of a length that is greater than the said first distance.

68. The valve of claim 67 wherein the valve means is separate from the operating rod means.

69. The valve of claim 63 and a pivotal connection intermediate the water inlet section and the water outlet section, the pivotal connection permitting pivotal movement between the said sections.

70. An automatic water valve comprising a water inlet section and a water inlet section and a water outlet section pivotally connected together, the water inlet section and the water outlet section each having a water conduit therethrough the respective water conduits being in fluid communication, a normally closed valve means in the water inlet section water conduit to normally interrupt the flow of water through the automatic valve a valve operating means axially movable through the communicating conduits of the water inlet section and water outlet section, the valve operating means being adapted to close the valve means when the water outlet section is pivotally moved sufficiently to axially align the communicating conduits of the water inlet section and the water outlet section, the valve operating means being adapted to automatically pivot the water outlet means relative to the water inlet means when the valve means is in its normally closed position.

Claims

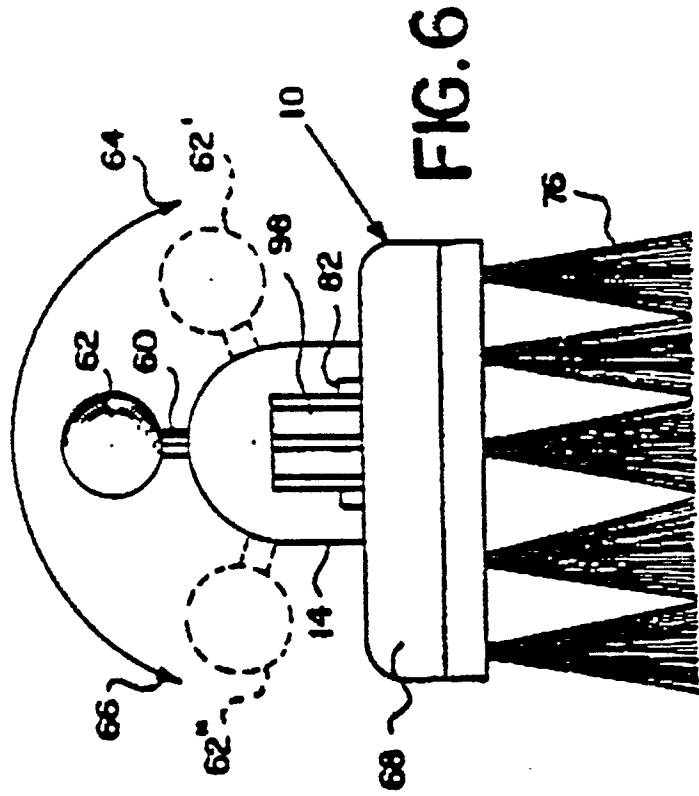
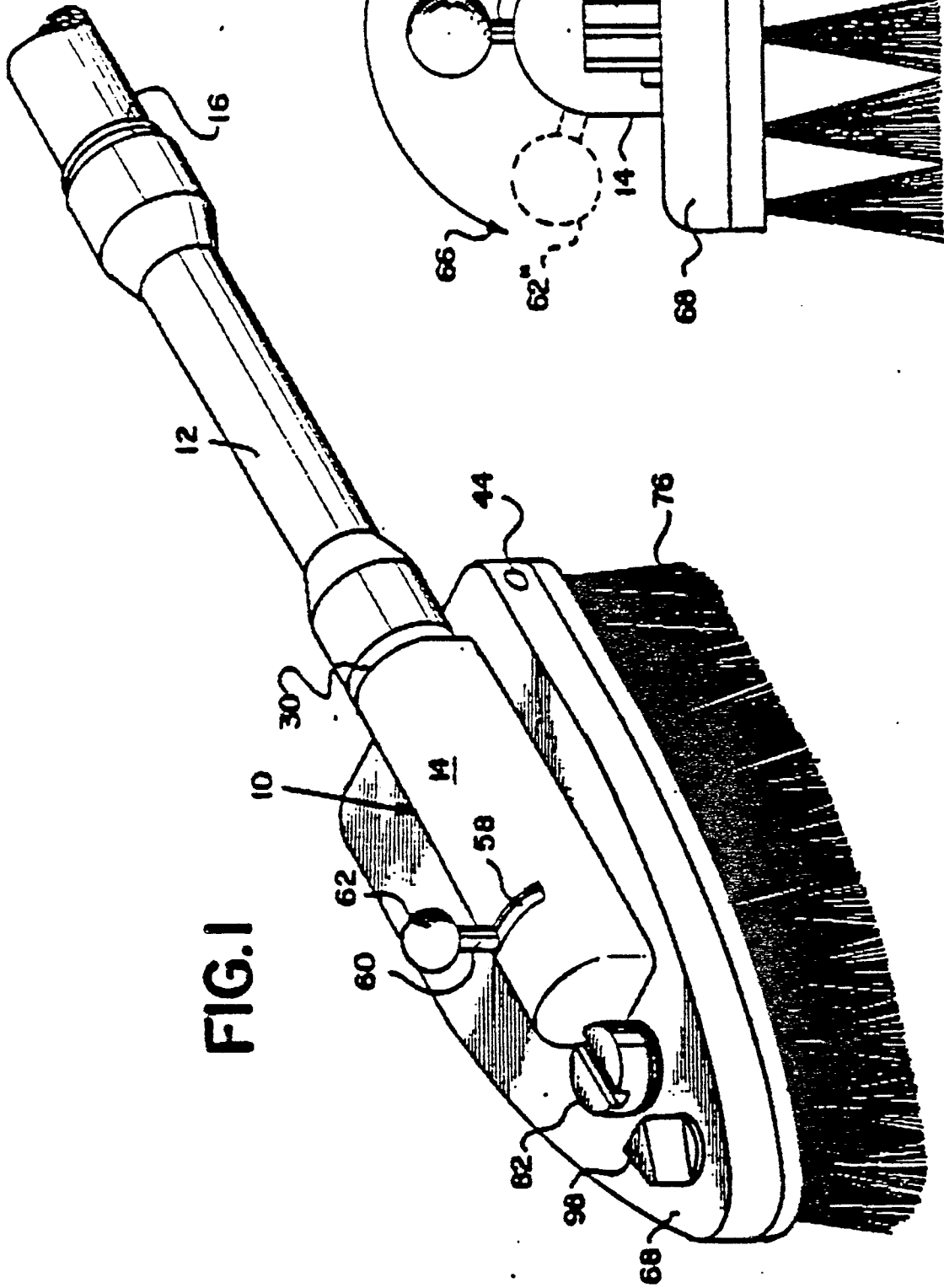
1. An automatic fluid valve comprising fluid inlet means for passing fluid flow therethrough, fluid outlet means connected to the inlet means to receive fluid from the inlet means, valve means to normally interrupt the flow of fluid from the inlet means to the outlet means, and valve-operation means to selectively open the valve based on the relative positions of the inlet and outlet means.
2. An implement including the valve of claim 1, wherein the inlet means comprises handle means, and the outlet means comprises body means connected to the handle means, the body portion having an element, which is to use the fluid, secured thereon.
3. A valve according to claim 1 or an implement according to claim 2, wherein the valve-operation means comprises rod means positioned partly within the inlet means and partly within the outlet means, the operating rod means being in contact with the valve means and with abutment means in the outlet means.
4. A valve according to claim 1 or 3, or an implement according to claim 2 or 3, wherein the valve means is not connected to the valve-operating means, which is adapted to force the valve means off valve seat means to open the valve.
5. A valve according to claim 1, 3 or 4 or an implement according to claim 2, 3 or 4, wherein the valve means comprises a flutter valve.
6. A valve according to any of claims 1 to 3 to 5, or an implement according to any of claims 2 to 5, wherein the inlet means and the outlet means are in non-axially aligned relation when in the open position of the valve, and the inlet means and the outlet means are in axially aligned relation when in the closed position of the valve.
7. A valve according to any of claims 1 and 3 to 6, or an implement according to any of claims 2 to 6, wherein the valve-operation means comprises an elongate rod, and wherein the end of the rod in the inlet means extends beyond the position of the valve means in its closed position.
8. A valve according to any of claims 1 and 3 to 7, or an implement according to any of claims 2 to 7, comprising sealing means to prevent passage of fluid between the inlet and outlet portions other than through the valve means.
9. A valve according to any of claims 1 and 3 to 8, or an implement according to any of claims 2 to 8, comprising a detergent reservoir including barrier means defining a detergent discharge compartment and a detergent storage compartment in communication with the discharge compartment.
10. An implement according to any of claims 2 to 8, wherein the element is a cleaning element.

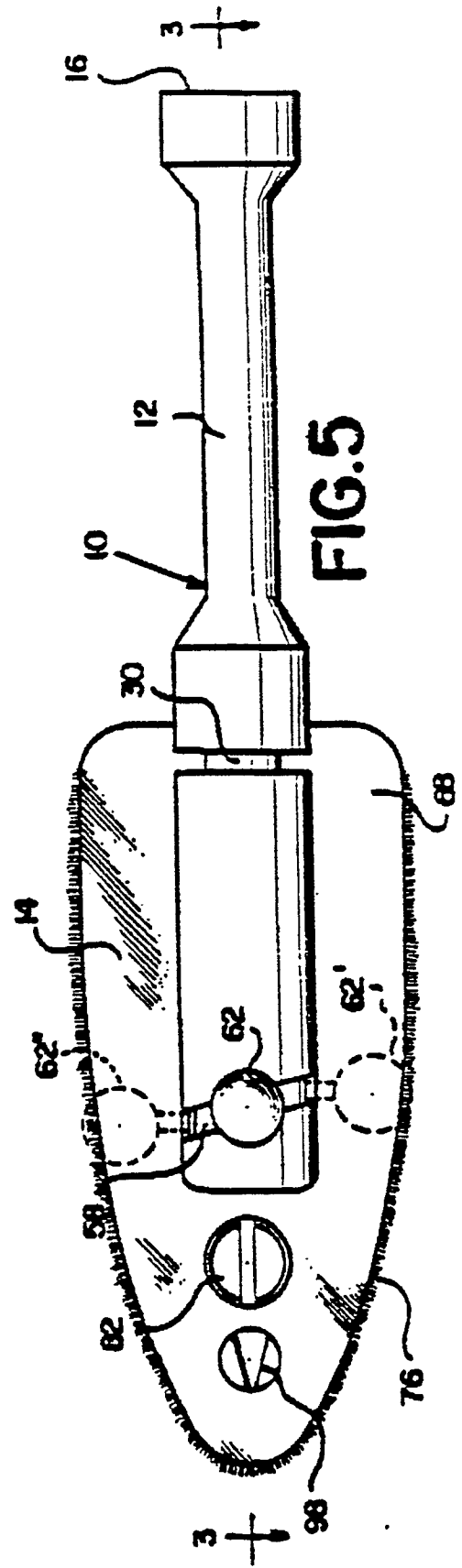
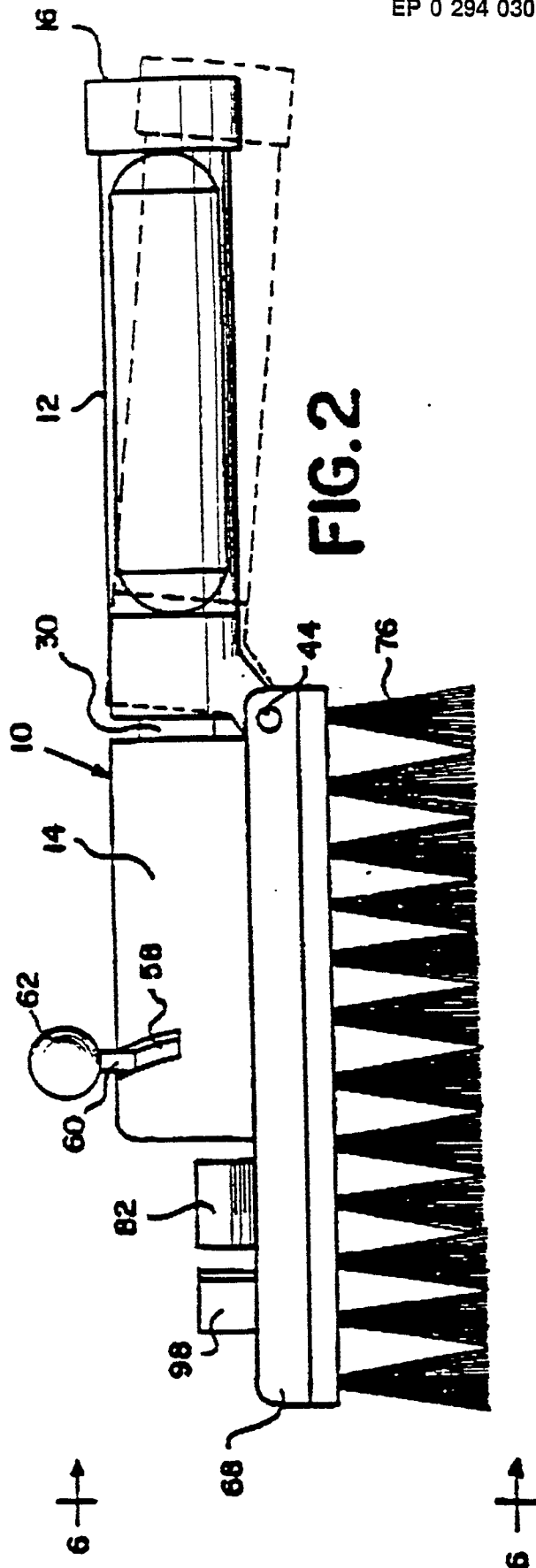
11. A valve according to any of claims 1 and 3 to 9, or an implement according to any of claims 2 to 10, wherein the fluid inlet means includes means to be connected to a source of fluid under pressure.

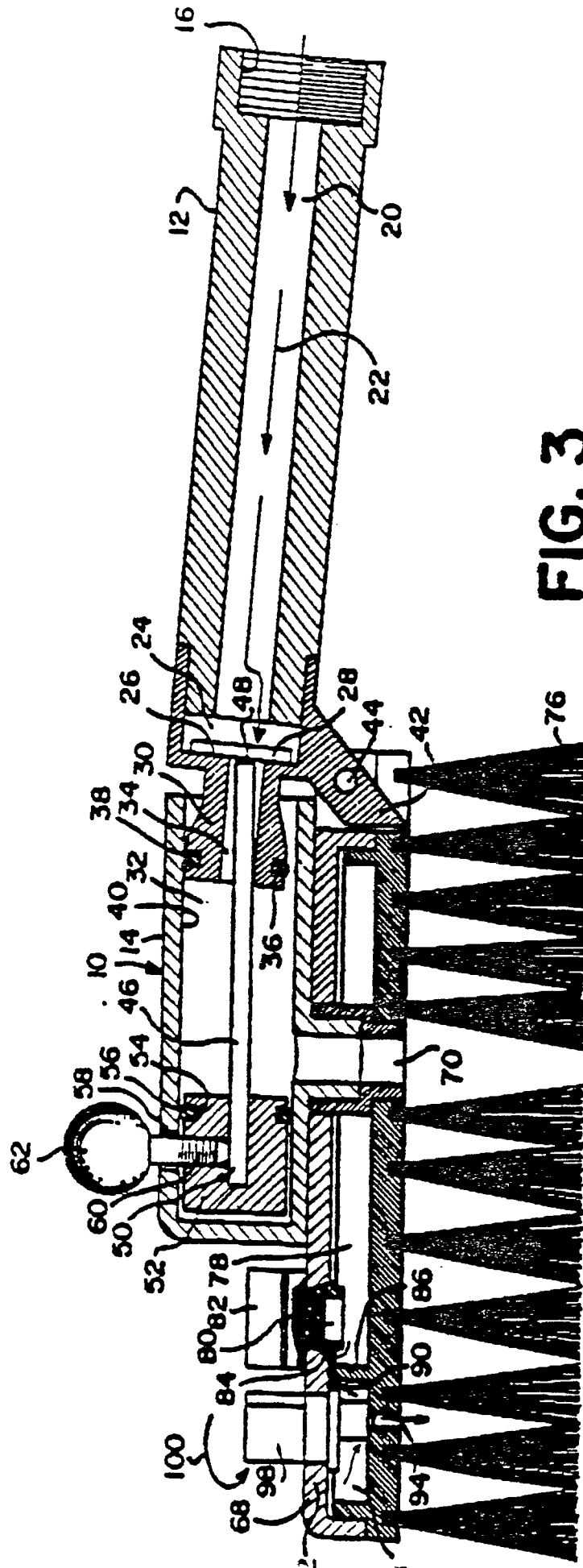
12. A valve according to any of claims 1, 3 to 9, and 11, or an implement according to any of claims 2 to 11, wherein the inlet and outlet means are pivotally interconnected so as to pass fluid from the inlet means to the outlet means according to their relative pivotal positions, and the valve-operation means is operative to open the valve means a predetermined amount upon predetermined relative pivoting of the inlet and outlet means.

13. A valve according to any of claims 1, 3 to 9, 11 and 12, or an implement according to any of claims 2 to 12, including means to selectively adjust the rate of 13. A valve according to any of claims 1, 3 to 9, 11 and 12, or an implement according to any of claims 2 to 12, including means to selectively adjust the rate of passage of fluid through the valve to a value of less than the maximum possible rate.

14. A valve according to any of claims 1, 3 to 9, and 11 to 13, or an implement according to any of claims 2 to 13, having means interconnecting the inlet and outlet means comprising a flexible nozzle.







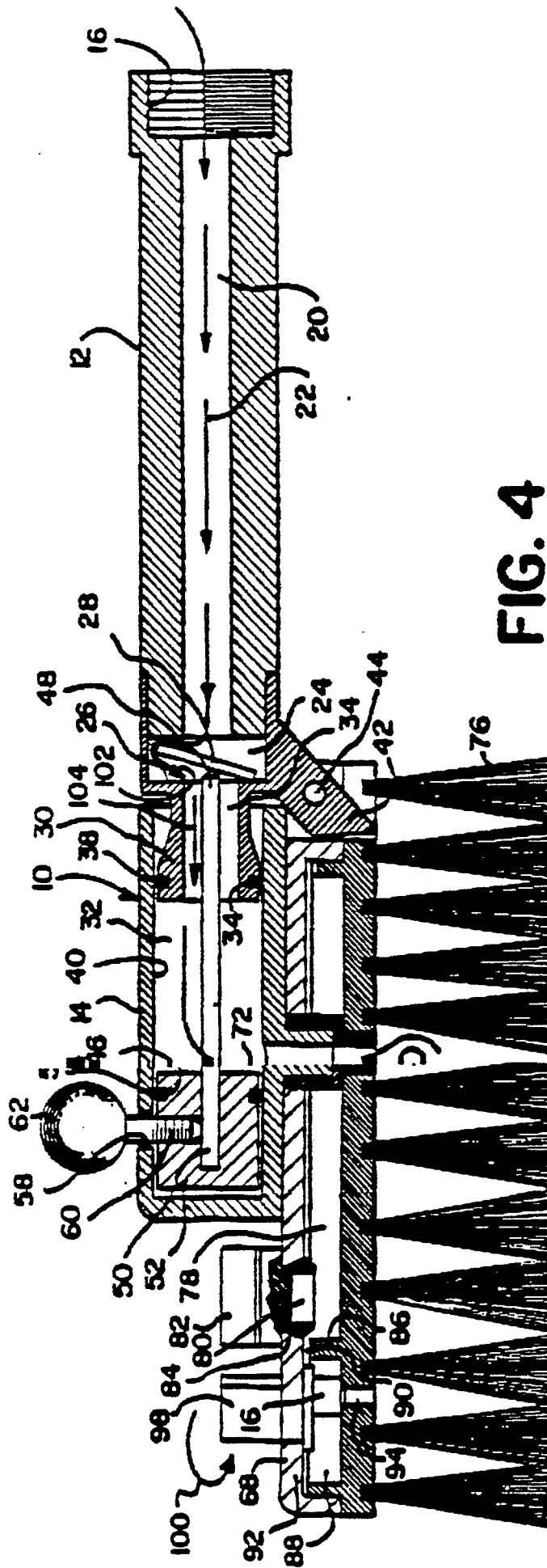
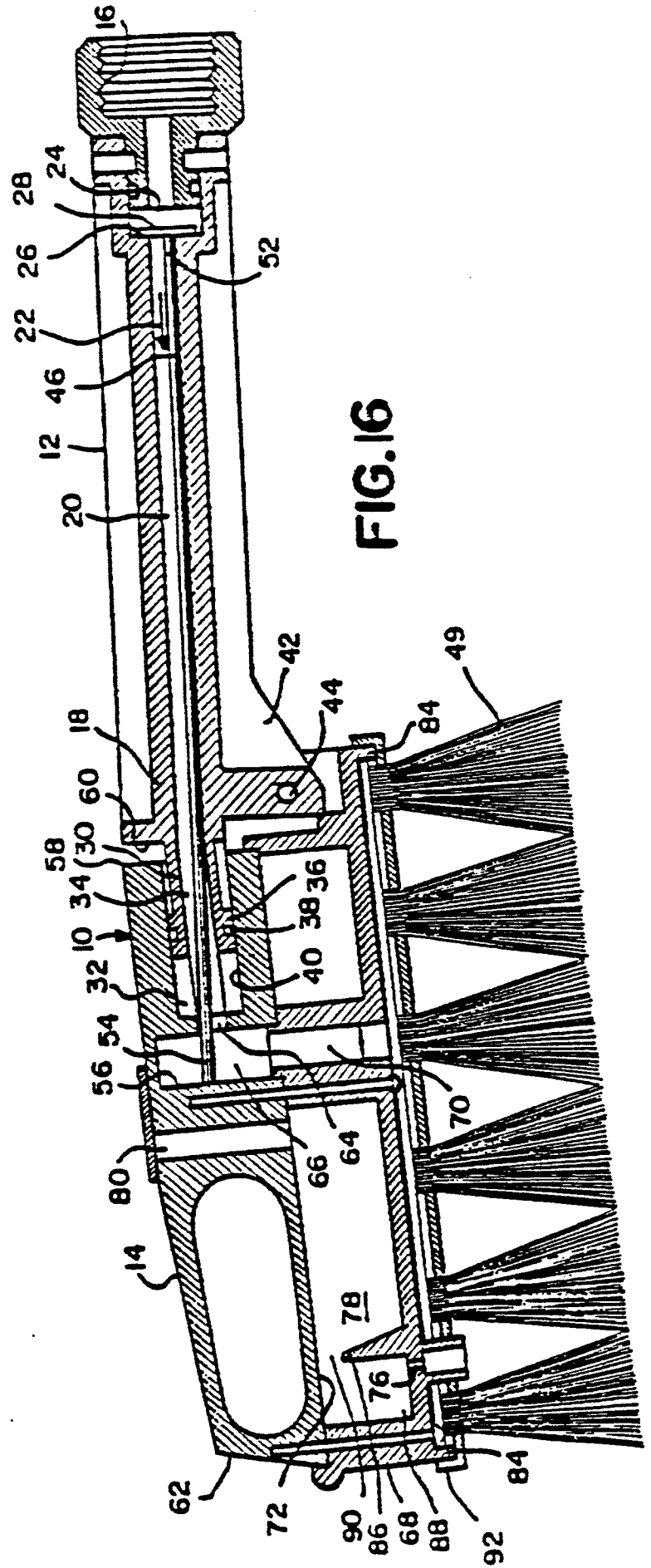
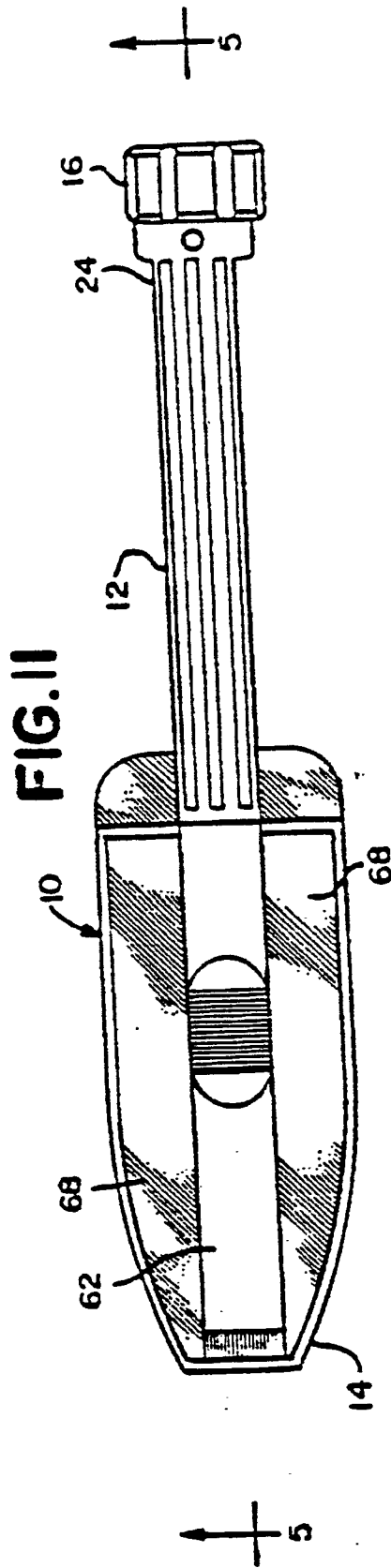
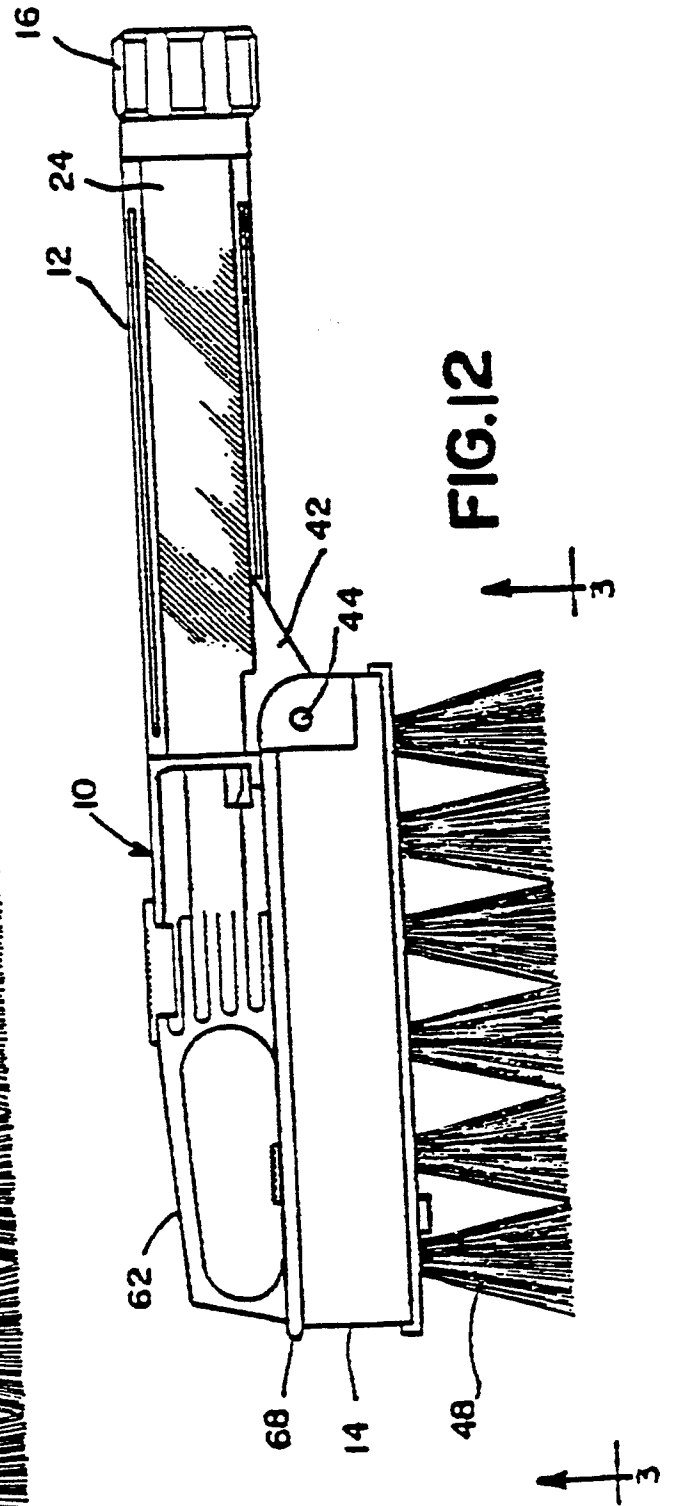
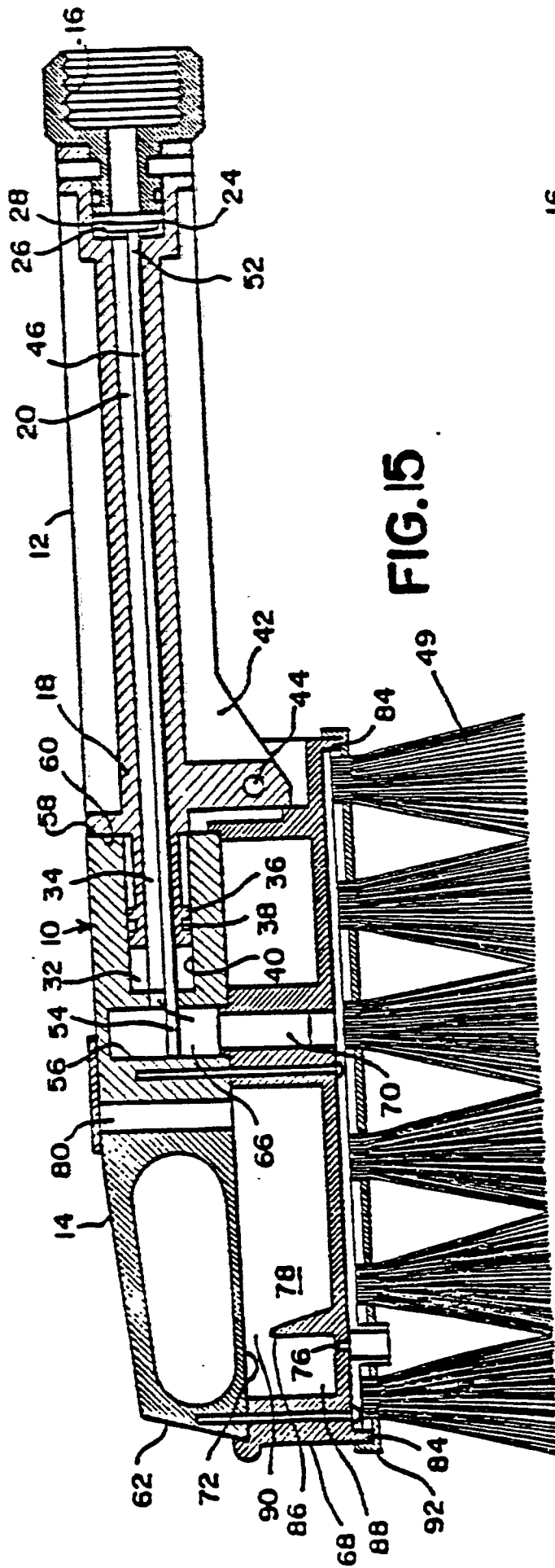


FIG. 4





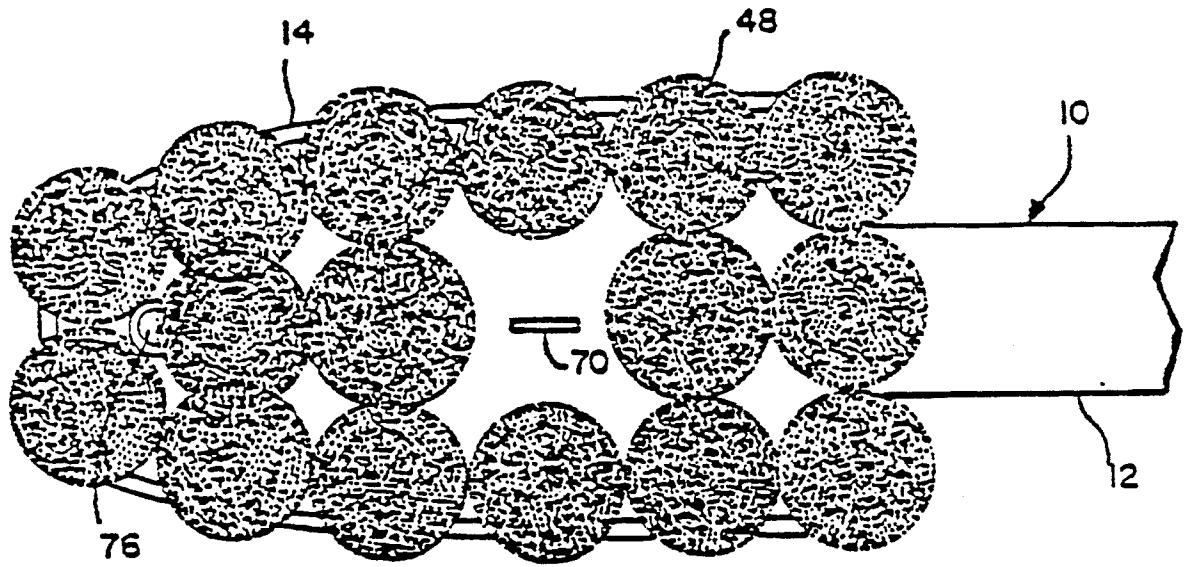
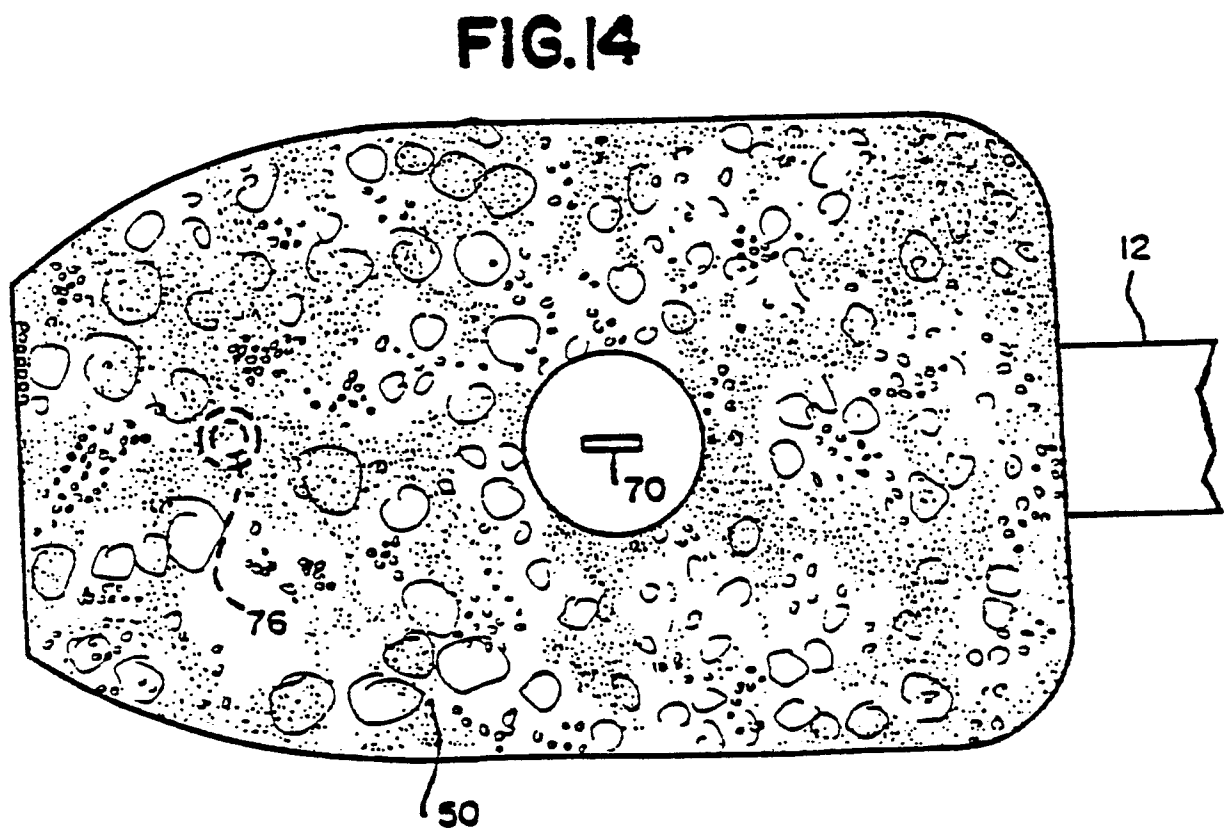


FIG. 13



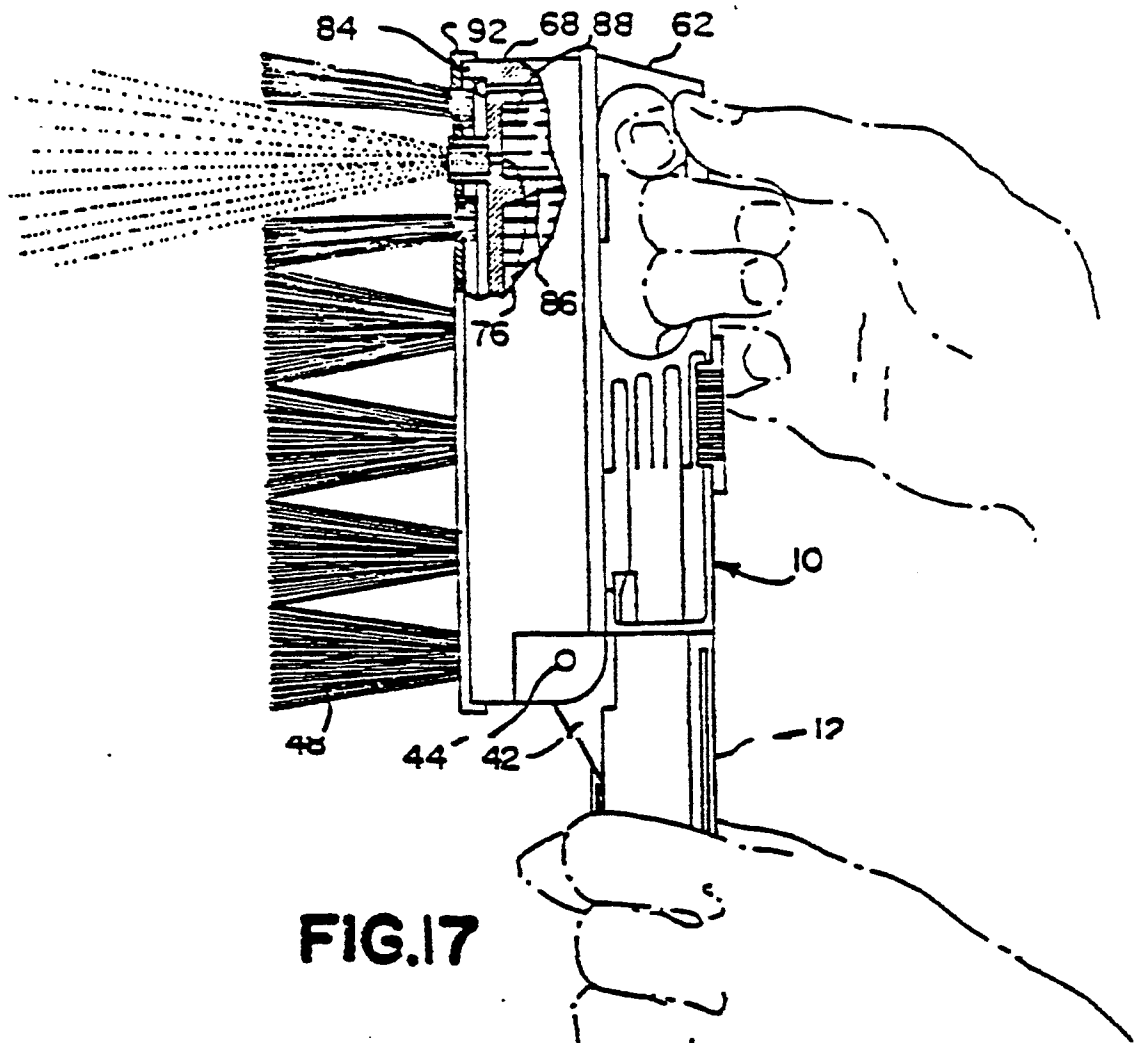


FIG.17

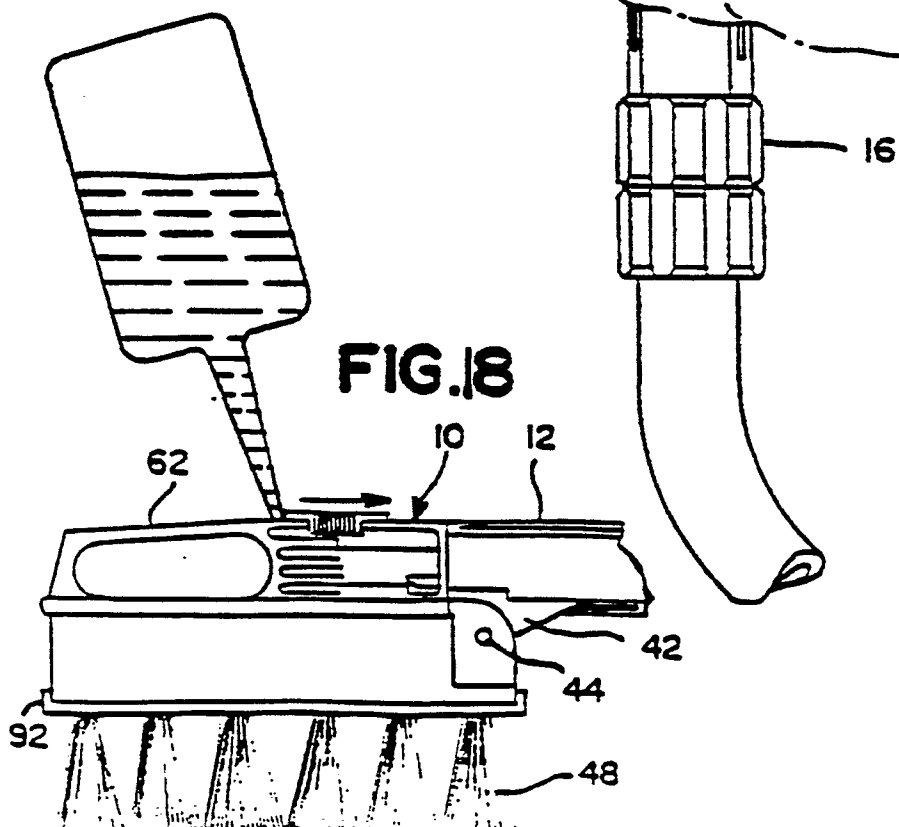


FIG.18

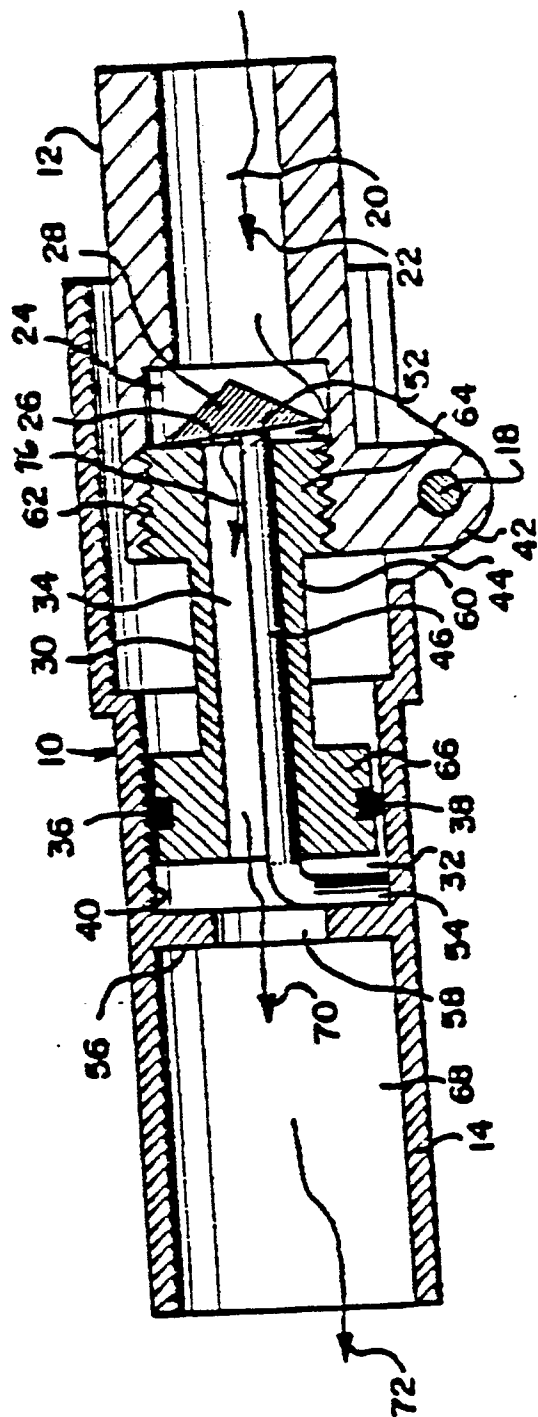


FIG. 21

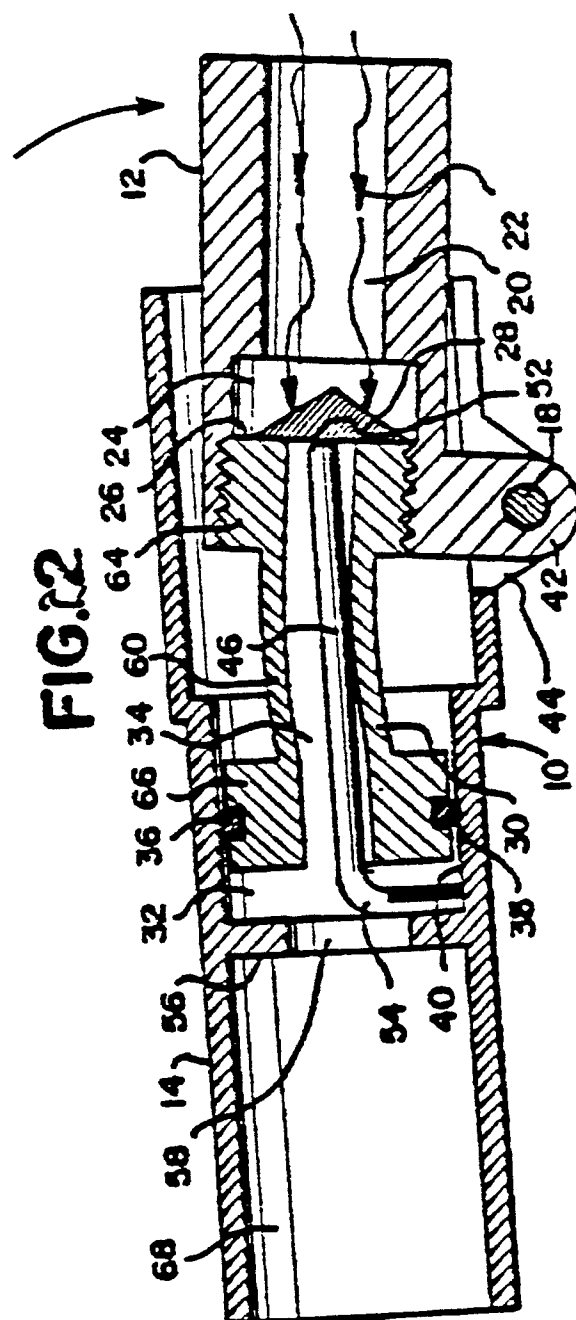


FIG. 2

