

[54] **MULTIPLE SPRAY HEAD**

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239/587

[51] Int. Cl. **B05b 1/20**

[58] Field of Search **239/550, 551, 562, 566,**
239/567, 587, 164, 169, 170, 176

[56] **References Cited**

UNITED STATES PATENTS

535,669 3/1895 Burt 239/550 UX
753,730 3/1904 Owen 239/562 X

773,203 10/1904 Fosdick 239/587 X
1,070,866 8/1913 Willis 239/587 X
1,863,685 6/1932 Covey 239/562 X
2,299,259 10/1942 Sites 239/562 UX
2,597,727 5/1952 Hanson 239/164
2,985,385 5/1961 Bowers et al. 239/587 X

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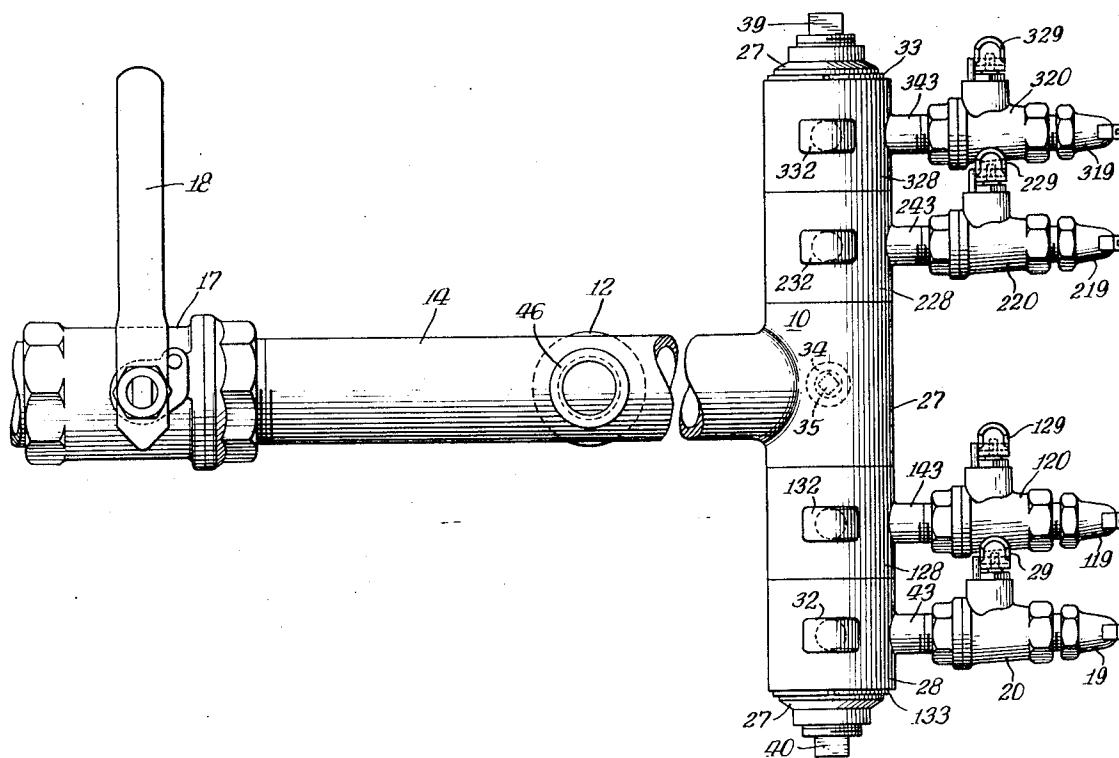
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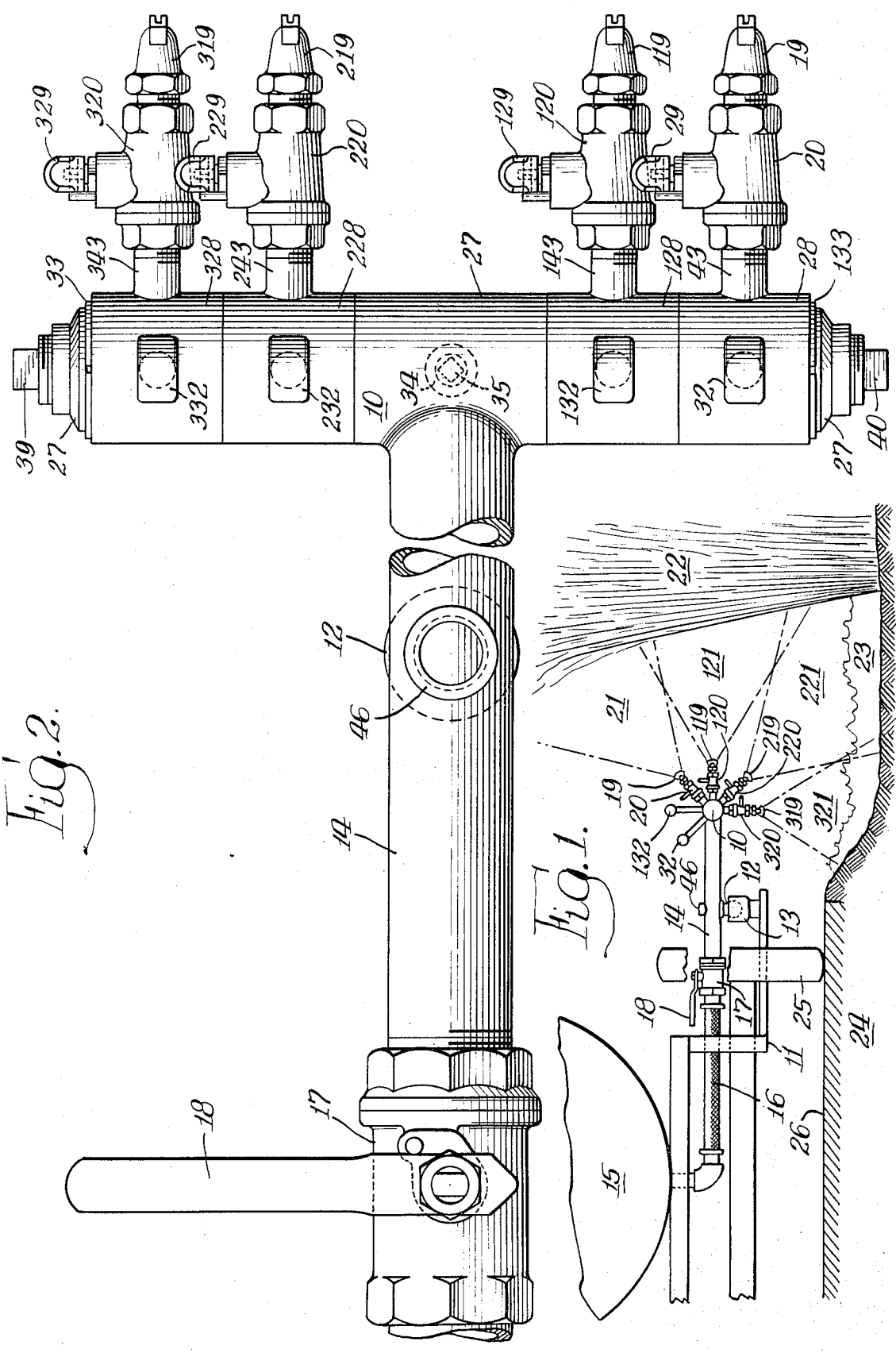
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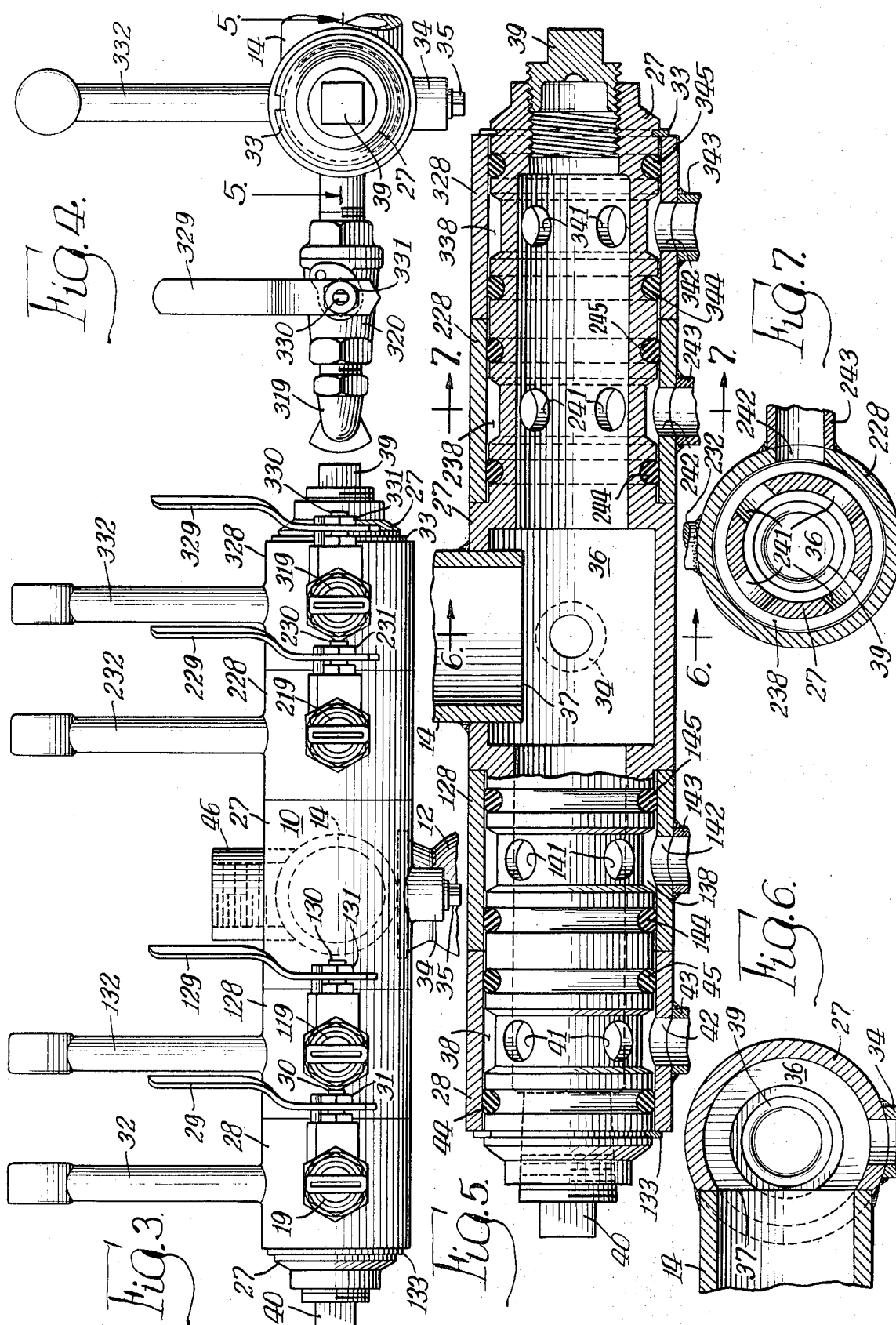
ABSTRACT

Disclosed is a liquid spray head having multiple nozzles which can be rotated into any desired position and through which the flow of liquid can be independently controlled to adjust both the quantity and the distance to which the liquid is sprayed.

1 Claim, 7 Drawing Figures







MULTIPLE SPRAY HEAD

This invention relates to a multiple liquid spray head capable of directing a plurality of liquid streams into different directions. More specifically this invention relates to a multiple liquid spray head whereby the direction of each of a plurality of liquid streams can be independently controlled to any desired position in a vertical plane.

It is common practice today to clear railroad right-of-ways, road shoulders as well as paths along overhead electric power lines of undesired vegetation by means of chemical sprays which are effective in controlling the growth or destroying such undesired vegetation. These chemical sprays are typically applied to the undesired vegetation from a moving vehicle traveling along the path which is to be cleared. The application of the chemical sprays is usually effected by mounting one or more spray nozzles on the side of the vehicle in such a position as to direct the spray to a desired distance from the vehicle.

It has been found in practice, however, that frequent readjustment of the spray direction is required to accommodate varying terrain and to prevent the undesirable destruction of beneficial vegetation, such as agricultural crops, which may come in close proximity to the path being sprayed. Accordingly, a need exists for a device whereby each of a plurality of liquid sprays can be readily and conveniently directed towards any desired location.

It has now been found that this need has been satisfied by the multiple spray head of the present invention. The spray head of this invention permits, by means as will hereinafter be described, a simple and convenient adjustment of each of a plurality of liquid sprays to any desired position in a vertical plane. This adjustment enables the application of each of the sprays to a desired distance from the location of the spray head and further allows for a quick change of this distance of application.

Thus, an embodiment of the present invention resides in a multiple liquid spray head comprising

- a. a generally cylindrical core member having an interior cavity, an entry port in communication with said cavity, a plurality of annular grooves circumferentially disposed in the bottom of each groove and communicating with the cavity of said core;
- b. a plurality of annular rings rotatably mounted on the exterior surface of the core member and positioned around each of the annular grooves on said core member, each having a passageway leading from the exterior surface of the ring to the annular groove in the core member; and
- c. liquid spray directing means mounted on the exterior opening of the passageway in each annular ring.

A more specific embodiment of the multiple spray head of the present invention is illustrated in the accompanying drawings wherein various aspects of the spray head are shown in seven figures.

FIG. 1 shows the multiple spray head in use while mounted on a moving vehicle.

FIG. 2 shows a top view of the spray head with four separate spray nozzles.

FIG. 3 shows a front view of the spray head.

FIG. 4 shows a side view of the spray head.

FIG. 5 is a cross section taken along plane 5—5 in FIG. 4. The right portion of this figure is a true cross section and the left portion is a partial cross section exposing the outside of the core member.

FIG. 6 is a cross section of the spray head taken along plane 6—6 in FIG. 5.

FIG. 7 is a cross section of the spray head taken along plane 7—7 in FIG. 5.

Referring now specifically to the drawings in FIG. 1 there is shown a spray head 10 mounted on the end of a supply conduit 14. The supply conduit 14 is movably mounted on a vehicle frame 11 by means of a ball 12 and socket 13. The supply conduit 14 is also equipped with a fixed mounting lug 46 which can be used to secure the spray head 10 as an alternative to the ball 12 and socket 13 mounting. The vehicle frame 11 is mounted on wheels 25 resting on a road surface 26. The supply conduit 14 is connected to a master valve 17. The master valve 17 is connected to a supply tank 15 via a flexible hose 16 to permit movement of the supply conduit 14 and spray head 10. The spray head 10 in the drawings is shown equipped with four spray nozzles 19, 119, 219, and 319. Each of these nozzles is fitted with individual valves 20, 120, 220, and 320 to permit a selection of the number of operative nozzles. In FIG. 1 the spray head 10 is depicted as it might appear in the actual operation. Four separate spray patterns 21, 121, 221, and 321 directed toward both arborous vegetation and weeds 23 growing along a road bed 24 are shown.

Referring to FIGS. 2, 3, and 4, there are shown in greater detail, the top front and side views respectively of a multiple spray head of this invention. This spray head 10 has a generally cylindrical core member 27 with four annular rings 28, 128, 228, and 328 rotatably mounted thereon. Onto the middle portion of the core member 27 there is attached a supply conduit 14 having a master valve 17 equipped with a control handle 18. On each of the annular rings 28, 128, 228, and 328 there is mounted an individual valve 20, 120, 220 and 320; and on the end of each of said valves there is mounted a spray nozzle 19, 119, 219, and 319. The individual valves 20, 120, 220, and 320 are equipped with control handles secured to the valve stems 30, 130, 230 and 330 by means of lock nuts 31, 131, 231 and 331. Each of the annular rings 28, 128, 228 and 328 is further equipped with a lever 32, 132, 232 and 332 to facilitate manual rotation of the annular rings. The annular rings 28, 128, 228 and 328 are retained on the core member 27 by two split rings 33 and 133 positioned at each end of the core member 27. The core member 27 is equipped with a short drain pipe 34 sealed by a drain plug 35.

The cross section in FIG. 5 taken along plane 5—5 of FIG. 4 further details the elements of the exemplified spray head of this invention. The central and right hand portion of this figure is a true cross section exposing the interior of the core member 27. The left hand portion of this figure is a cross section of the annular rings 28 and 128 exposing the exterior surface of a portion of the core member 27. It can be seen from this figure that the core member 27 has an interior cavity 36 and an entry port 37 leading from the supply conduit 14 into the interior cavity 36. The core member 27 has its ends sealed by threaded plugs 39 and 40. Furthermore the core member 27 has a plurality of grooves 38, 138, 238 and 338 circumferentially disposed in its outside wall.

In the bottom of each of the grooves 38, 138, 238 and 338 there are situated a plurality of exit ports 41, 141, 241 and 341 which lead into the interior cavity 36 of the core member 27. Around each of the grooves 38, 138, 238 and 338 there are rotatably mounted the annular rings 28, 128, 228 and 328. These annular rings each have a passageway 42, 142, 242 and 342 leading from the exterior surface of said ring to the annular groove 38, 138, 238 and 338 in the core member 27. On the exterior opening of each passageway 42, 142, 242 and 342 there is mounted a connecting tube 43, 143, 243 and 343 which leads to the valves 20, 120, 220 and 320 heretofore described. To provide a seal between the core member 27 and each of the rotatably mounted annular rings 28, 128, 228 and 328 there are interposed on each side of the grooves, 38, 138, 238 and 338 a pair of o-rings 44 and 45, 144 and 145, 244 and 245, and 344 and 345.

In FIG. 6 there is shown the details of the core member 27 taken across plane 6—6 of FIG. 5, as well as the drain pipe 34 and the entry port 37 leading from the supply conduit 14 into the cavity 36. Also shown is the cross section of the drain pipe 34. FIG. 7 shows a cross section, taken along plane 7—7 of FIG. 5, of the core member 27, the groove 238 and the annular ring 228. Further shown in this figure are the exit ports 241 leading from the cavity 36 to the groove 238. In addition there is detailed the passageway 242 in the annular ring 228 as well as the connecting tube 243 mounted thereon.

It can be seen, in operation of the spray head, that a liquid can pass from the supply conduit 14 into the interior cavity 36 of the core member 27. From the cavity 36 the liquid can pass through each of the exit ports 41, 141, 241 and 341 into the grooves 38, 138, 238 and 338. From there the liquid can flow through the passageways 42, 142, 242 and 342 situated in the annular rings 28, 128, 228 and 328 into the valves 20, 120, 220

and 320 and the spray nozzles 19, 119, 219 and 319 via the connecting tubes 43, 143, 243 and 343. Rotation of the annular rings 28, 128, 228 and 328 to any desired position will not interfere with the free flow of liquid through the spray head of this invention.

It is readily apparent that while a specific embodiment of the present invention has been described in the specification and drawings, changes and modifications can be made therein without departing from the scope of the invention as defined in the appended claims.

I claim:

1. A multiple liquid spray head comprising

- a. a generally cylindrical core member having an interior cavity, an entry port in communication with said cavity, a plurality of annular grooves circumferentially disposed in the outside wall of said core member and at least one exit port disposed in the bottom of each groove and communicating with the cavity of said core;
- b. a plurality of annular rings rotatably mounted on the exterior surface of the core member and positioned around each of the annular grooves on said core member, each having a passageway leading from the exterior surface of the ring to the annular groove in the core member and each ring having a lever mounted thereon whereby rotation of said ring can be effected;
- c. liquid spray directing means each equipped with a liquid control valve mounted on the exterior opening of the passageway in each annular ring;
- d. a supply conduit in communication with the entry port of the core member and equipped with a valve capable of controlling the amount of fluid passing through said conduit; and
- e. sealing means interposed between the core member and the annular rings on each side of the annular grooves.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No 3,826,431

Dated July 30, 1974

Inventor(s) Donald E. Telge

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In column 1, line 47 after "disposed" insert -- in the outside wall of said core member and at least one exit port disposed --.

In column 3, line 14 for "number" read -- member --.

Signed and sealed this 8th day of October 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents