

COMMISSIONER'S DECISION

Obviousness: Spraying Nozzle

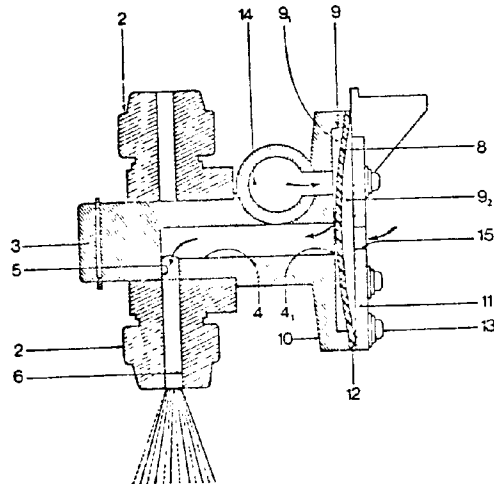
Use of a multi headed spray nozzle allowing selection of the desired nozzle position is shown in the prior art.

Final Action: Affirmed.

This decision deals with a request for review by the Commissioner of Patents of the Examiner's Final Action dated November 1, 1977, on application 234,313 (Class 299-15). The application was filed on August 25, 1975, in the name of Maurice C.J. Lestradet, and is entitled "Spraying Device."

This application relates to a sprayer head in which fluid flows through a pipe and is discharged through a rotatable nozzle carrying a turret member. There are four nozzles on the turret member any one of which can be rotated into position to select the desired spray for the material used. A flexible diaphragm acts as the flow control shut off means, and also serves to prevent a drip when the spray is in the closed position.

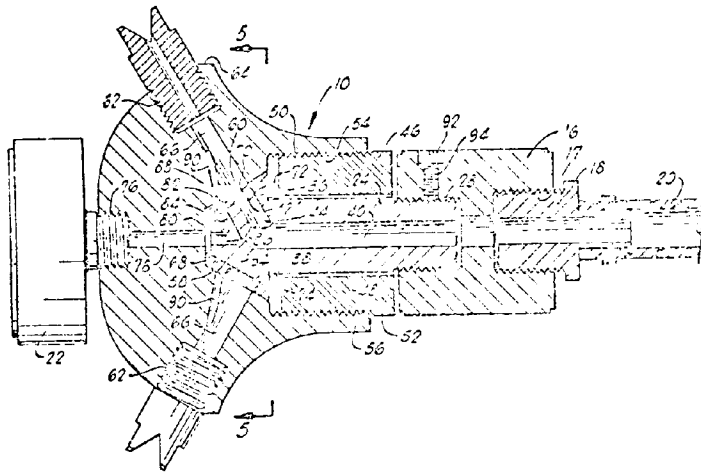
Figure 3 is representative of the invention:



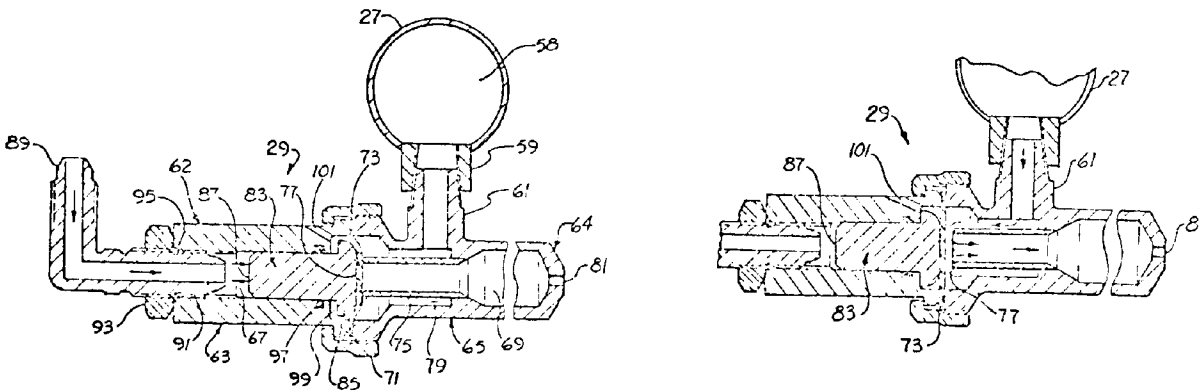
In the Final Action the examiner refused the application for failing to define patentable subject matter over the following patents:

| | | | |
|---------------|---------|----------------|-----------|
| United States | 3637142 | Jan. 25, 1972 | Gassaway |
| | 3684177 | Aug. 15, 1972 | Barlow |
| | 1554521 | Sept. 22, 1925 | Reece |
| French | 2151711 | March 26, 1973 | Lestradet |

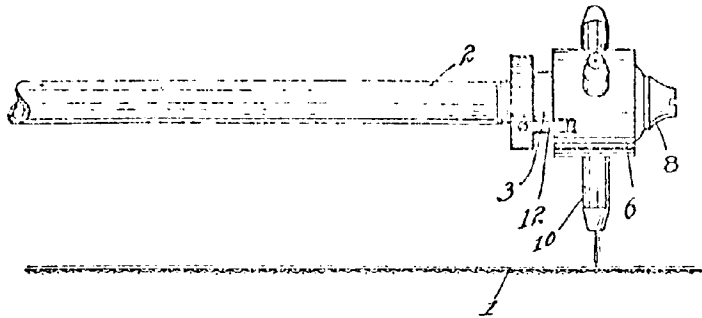
Gassaway discloses a multinozzle spraying apparatus for spraying insecticides. A plurality of nozzles having differing spray characteristics are attached to a multiport turret member. Figure 4 of this patent is as follows:



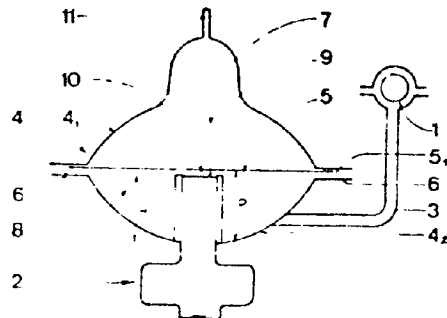
Barlow describes a spraying device comprising a spray boom having a plurality of nozzles attached thereto. A pressure-responsive valve actuating a diaphragm member is used as shut-off arrangement for each nozzle. Figures 2 and 2a are shown here to illustrate the Barlow patent.



Reece discloses a turret with three jet nozzles used with Fourdrinier paper-making machines. Figure 1 of Reece appears next:



The applicant's French patent 2,151,711 relates to a spray arrangement attachable to agricultural vehicles. It consists of a boom with a number of nozzles thereon. An air chamber arrangement is used to actuate the shut-off diaphragm for each nozzle. Figure 1 of this patent is shown below.



In his Final Action the examiner stated (in part):

American patents 3637142 and 1554521 show that it is well known to make a nozzle carrier provided with several ducts, each duct leading to a nozzle. As disclosed in these patents, the nozzle carrying turret is rotatable on a turret housing having an axial orifice communicating with a radial conduit which can be selectively brought into fluid communication with one or another nozzle. The U.S. patents describe a nozzle carrier equivated to the structure defined in the application.

U.S. Patent 3684177 and French patent 2151711 describe an anti-drip device equivalent to that of the present application. Those devices comprise a diaphragm placed in a distribution chamber situated upstream the axial orifice of the turret housing, the chamber being, on one side of the diaphragm connected to a feed pipe, and on the other side to a pressure source.

The examiner believes it to be obvious to one skilled in this art to provide remote control means for the rotation of the turret and actuation of the anti-drip device.

As indicated by the applicant in his letter of August 2, 1977, the present application involves a novel combination of well-known elements. The examiner believes such a combination of well-known means (eg. a turret containing several nozzles and an anti-drip means) produces only the expected results. The combination is obvious to one skilled in the art, and the disclosure provides no patentable subject matter if one considers the patents cited. There is no ingenuity present.

In response to the Final Action the applicant amended pages 1 to 6 of the disclosure and replaced claims 1 to 11 with amended claims 1 to 29. In that response he stated (in part):

However, as indicated above, the arrangement of exit orifice 16 of the feed pipe 14 and of the axial orifice 4 of turret housing 3 is not unimportant, but has been deliberate so that the two orifices 16 and 4 are essentially parallel to each other. This gives the surprising advantage that the closure elements when they are comprised of a supple and deformable diaphragm 8, are worn less quickly than in the previous anti-drip means. Even though it is not known why these favourable results are obtained, it seems that they come from the fact that the discharge of sprayed fluid being sprayed exiting from orifice 16 of feed pipe 14 is directed against diaphragm 8, contrary to past practice, and particularly that of French patent 2151711. In the French patent the fluid discharge is not directed against diaphragm 5, but against nozzle 2, which produces turbulence within chamber 8, and that seems to cause faster wear of diaphragm 5 than is necessary. Consequently the advantage from placing exit orifice 16 of the supply pipe 14 in relationship to the obturation diaphragm 8 is apparent, and the results are conclusive.

If we examine the references cited, and first U.S. patents 3637142 and 1554521, we find at once that the device described in these two American patents does not include any anti-drip device, and consequently can not be considered as anticipatory, nor as leading to the invention as presently defined. No mention is made in these patents of an arrangement between the exit orifice of a supply pipe and an anti-drip device communicating with the exit orifice.

Consequently the applicant believes the claims as now defined easily avoid the two patents.

With respect to U.S. Patent 3684177, which shows a control means, it is clear that the orifice of the supply pipe and the flow orifice of the fluid being sprayed are orthogonal, which is completely contrary to the arrangement of orifices in the application, and in no sense equivalent to the present invention.

As for French Patent 2151711, it has already been explained above that the arrangement of the inlet pipe in chamber 8 to the supple diaphragm 5, is not ideal for wear, and consequently it was necessary to utilize other means to correct that fault, something which has been achieved by the arrangement conceived by the present applicant.

The issue to be considered is whether or not the applicant has made a patent-able advance in the art. To do so we first look at the multi-ported turret member with a plurality of spray nozzles, and find that this is known. Gassaway uses this type of turret nozzle arrangement for spraying insecticides, or for other agricultural purposes. Reece also uses a similar rotating head multi-nozzle in paper making machinery.

According to the applicant an essential characteristic of his invention resides in having the supply conduit arranged parallel to the axial orifice of the casing flow opening. Looking at the flow pattern as shown in figure 2a of Barlow we find that it also has the supply conduit parallel to the axial orifice of the nozzle supply casing.

It would appear that the concentric flow supply of Barlow acts in similar manner to that of the applicant. Looking at the flow pattern in the application we have fluid under pressure in pipe 14 moving into chamber 9 and deflecting 180° to exit via the orifice 4. Barlow's supply pipe 27 contains fluid under pressure and the discharge flow requires a 180° turn to exit to the orifice supply pipe. In each of these the direction of flow change occurs when the fluid impinges on the resilient flexible diaphragm.

Another feature relied upon by the applicant is that his anti-drip diaphragm lasts longer than any prior art device. This, he contends, is due to the parallel orifice supply and exit arrangement. We believe that this may be correct when comparing it with the applicant's French patent 2,151,711 where the supply fluid is tangential to the chamber and there is no solid backing member for the diaphragm under operating conditions. In Barlow the anti-drip diaphragm is housed in a chamber where it has solid backing support during flow conditions. Movement of the diaphragm in Barlow is relatively small,

and is supported by the valve seat 77. Diaphragm movement in the application is also very small, and under flow conditions it is supported by the cover 11. Consequently, since the flow characteristics of both are similar, we fail to find any reason why the diaphragm of the Barlow device would not last as long as that contemplated by the applicant.

In his letter the applicant stated (in translation) "the present invention is a combination of elements whose arrangement is such that it produces an unexpected result superior to the apparatuses of the same type already known." Use of a parallel fluid supply and nozzle orifice is shown in Barlow, as is the supported diaphragm. Also the use of a turret with multiple nozzles thereon is shown in Reece and Gassaway. Since the combination of elements of the prior art is very similar to that of the application we are satisfied that the results obtained would also be alike.

Claim 1 of the application reads as follows:

A spraying means for vehicle mounted sprayers comprising:

-an annular nozzle carrier containing several radial ducts each fitted with a spray nozzle, said annular base presenting an axial orifice

-a faucet-pipe placed in said axial orifice, the said faucet-pipe being provided with a blind axial orifice communicating with a radial conduit, said radial conduit being susceptible of being fed selectively to one of the radial ducts of said nozzle carrier,

-a feed pipe leading to the said faucet-pipe the material to be sprayed, the feed pipe having an exit orifice which is essentially parallel to the blind axial orifice of the faucet pipe,

-the said annular body being rotatable with respect to the faucet pipe, which it so placed that the selection of one type of pre-determined nozzle is brought about by angular displacement of said body,

-an anti-drip device placed in communication with said feed pipe and said closed axial orifice of the turret to prevent leakage of the material being sprayed from the feed pipe to the closed orifice of the turret after interruption of the feed, the anti-drip means comprising obturation elements, some means of pressure being provided to lead the said obturation elements to be activated against at least one of the axial closed orifices of the turret end of the exit of the feed pipe to close it tightly.

This claim specifies a turret body with several nozzles thereon, an anti-drip apparatus and the parallel relationship of the supply and casing conduits. In view of the considerations referred to above we are not persuaded that this claim is directed to a patentable advance in the art over the references cited by the examiner.

Independent claims 2 and 3 are similar to 1, but they recite the construction detail of the anti-drip feature. These features do not make a new and patentable combination over that refused in claim 1.

Claims 4 to 29 which depend directly or indirectly on claims 1, 2 or 3 add routine features, such as sealing elements, piston to apply pressure for sealing the orifice passage, and means for selecting nozzle position. These additional features are not patentable, and the same arguments in refusing claims 1, 2 and 3 apply equally well to these claims.

We are not satisfied that the application is directed to a patentable advance in the art. As stated by the examiner the claimed subject matter lacks inventive ingenuity. We are fully satisfied that the claims and application should be refused and so recommend.

Gordon Asher
Chairman
Patent Appeal Board, Canada

Having reviewed the prosecution of this application and considered the recommendations of the Patent Appeal Board, I now reject this application. If any appeal is to be taken under Section 44 of the Patent Act it must be commenced within six months of the date of this decision.

J.H.A. Gariepy
Commissioner of Patents

Dated at Hull, Quebec

this 4th. day of January, 1978

Agent for Applicant

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