

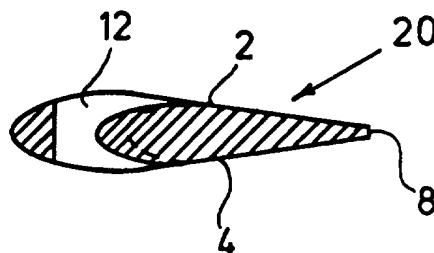
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/DK96/00035 (22) International Filing Date: 22 January 1996 (22.01.96) (30) Priority Data: 0062/95 20 January 1995 (20.01.95) DK (71) Applicant (for all designated States except US): TVÆR-SIGGÅRD SVINEPRODUKTION A/S [DK/DK]; Nørregade 53, Bjerre, DK-8783 Hornsyld (DK). (72) Inventor; and (75) Inventor/Applicant (for US only): OLESEN, Alfred [DK/DK]; Nørregade 53, Bjerre, DK-8733 Hornsyld (DK). (74) Agent: K. SKØTT-JENSEN PATENTINGENIØRER A/S; Lemmingvej 225, DK-8361 Hasselager (DK).		(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AZ, BY, KG, KZ, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>In English translation (filed in Danish).</i>

(54) Title: ATOMIZER**(57) Abstract**

In atomizers of the type, in which a first fluid is atomized over a wing blade shaped atomizer body mounted in a channel conducting a second fluid, and in which the first fluid is introduced into a hole (12) through the broad side (2, 4) of the wing blade and the wing blade is mounted with its sharp edge (8) downstream of the flow of the second fluid, there is produced a large amount of very fine particles or droplets exhibiting a high driftage, which is an undesirable phenomenon. It has been found, however, that it is possible to avoid the phenomenon in making the rear edge (8) of the wing blade profile non-sharp. When the rear edge is blunt, the phenomenon of the fine particles with high driftage simply disappears.



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ATOMIZER.

The present invention relates to an atomizer of the type, in which a first flow medium is atomized over an airfoil wing shaped atomizer member mounted in a flow channel for another flow medium, the first flow medium being introduced through a hole in the broad side of the airfoil wing member, this member having its tapered end located downstream of the flow direction of the other flow medium.

Such an atomizer is known e.g. from WO 87/00078. These atomizers, however, produce amounts of very fine particles exhibiting a large drifting, which is an undesired phenomenon. The particles are so small that they are not brought along in the operative current from the atomizer, but are carried by the surrounding atmosphere. The phenomenon is undesired already because the first flow medium, which may be an expensive additive, is not utilized fully. Also, poisonous sprays may be involved, where the drifting may cause damage to other plantation or to animal and human beings by inhalation. In the open air, the drifting of the small particles may float over long distances, depending of wheather conditions and droplet sizes.

With the invention, however, it has been found, surprisingly, that the phenomenon can be avoided in making the rear edge of the airfoil wing member non-line shaped. When the rear edge of the profile is not sharp, the phenomenon of the fine particles with large drifting simply does not occur. A better concentration of the droplets about a certain droplet size is achieved, and the average droplet size is decreased. A consequence of this is an improved and more accurate adjustability of the spraying. Moreover, the spraying result becomes more uniform.

In the following, embodiments of the invention will be described in more detail with reference to the drawing, in which:

Fig. 1 shows an embodiment of an airfoil wing member according to the invention, seen directly from above;

Fig. 2 shows the wing member directly from the side, with a first shape of the rear edge;

Fig. 3 shows the wing member directly from the side, with another shape of the rear edge;

5 Fig. 4 shows the wing member directly from the side, with a third shape of the rear edge; Fig. 5 shows a perspective view of of a tractor carried field sprayer; and

Fig. 6 shows a cross section of an atomizer for this sprayer.

10 In the drawing, the top side of the illustrated atomizer airfoil wing member is designated 2, the bottom side 4, the front edge 6 and the rear edge 8. The atomizer member has two side protrusions 10, with which it is mounted in a flow chan-
15 nel (not shown) for another flow medium, oriented with its rear end downstream of the flow. A first flow medium is introduced into a hole 12 open to the top and bottom sides of the wing member. The general layout of the wing member is described in WO 87/00078. The novelty of this invention resides in the shape of the rear edge, which is here terminated in a
20 flat, blunted manner as shown in Fig. 2. With this shape of the rear edge the phenomenon of the very fine particles with marked driftage is avoided.

Another shape of the rear edge is shown in Fig. 3, where the rear edge is shown rounded, while in Fig. 4 shows a ter-
25 mination at a V-shaped groove.

With this modest modification it has been found possible to do away with the problem of the minute particles with high driftage.

In Fig 5 of the drawing is schematically shown a tractor
30 carried field sprayer with a trifurcated spreader boom 16. The sprayer is adapted for mounting in the lift mechanism of the tractor, and the two outermost sections of the spreader boom can be pivoted forwardly into a transport position in parallel with the tractor. The spreader boom is provided with
35 atomizers 18 in the form of short ruer hose pieces having a collar 22 inserted in respective holes in the boom. Inside each ruer hose piece there is mounted an airfoil wing shaped atomizer member 20 as according to Fig. 2, pivotally mounted

based on the two projections 10 for adjustment of the spray direction. Through the stub 24 the atomizer member is hose connected with the spray tank 26 via a supply pump and a distributor pipe 30. The spreader boom 16 is connected to a
5 blower via the hose 28 for supply of air to the atomizers for the bringing along of the spray medium.

It has been found that the invention provides for a marked improved utilization of the spray agents, because the said driftage is largely avoided concurrently with the average size of the droplets being reduced. Obviously, the inven-
10 tion can be realized in other types of spraying equipment than just field sprayers.

C L A I M S :

1. An atomizer of the type in which a first flow medium is atomized over an airfoil wing atomizer member in a channel for another flow medium, the first flow medium being introduced into a hole (12) at the broad side (2,4) of the airfoil wing member, which has its pointed end located in the downstream direction of the other flow medium, characterized in that the rear edge (8) of the airfoil wing atomizer member is non-line shaped.
2. An atomizer according to claim 1, characterized in that the rear edge of the atomizer member is planar or substantially planar (Fig. 2).
3. An atomizer according to claim 1, characterized in that the rear edge of the atomizer member is rounded (Fig. 3).
4. An atomizer according to claim 1, characterized in that the rear edge of the atomizer member has two line shaped edges (Fig. 4).

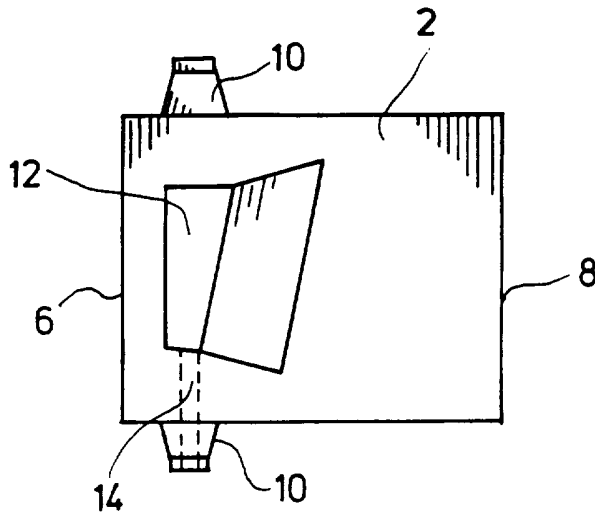


FIG. 1

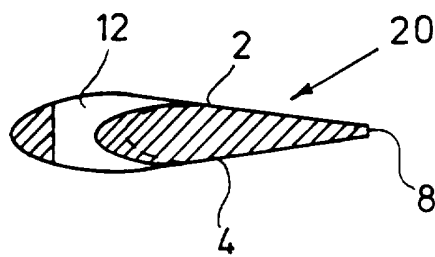


FIG. 2

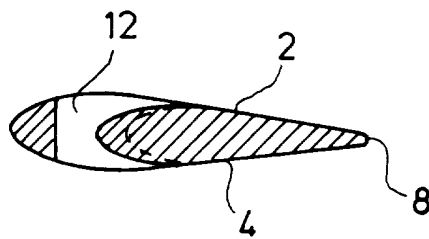


FIG. 3

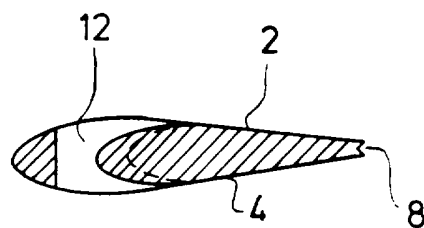


FIG. 4

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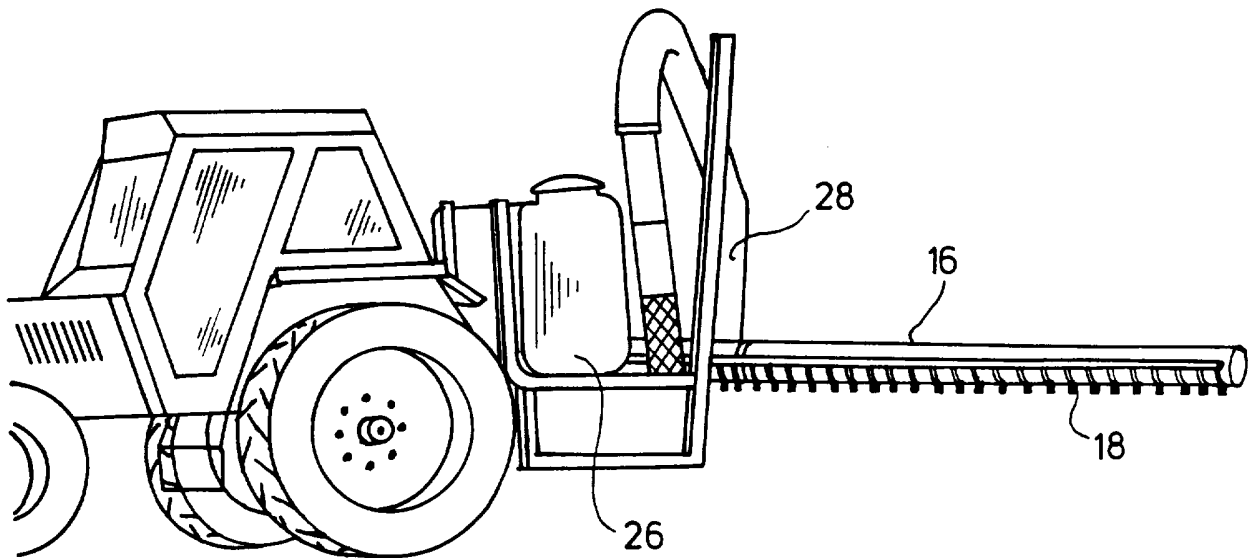


FIG. 5

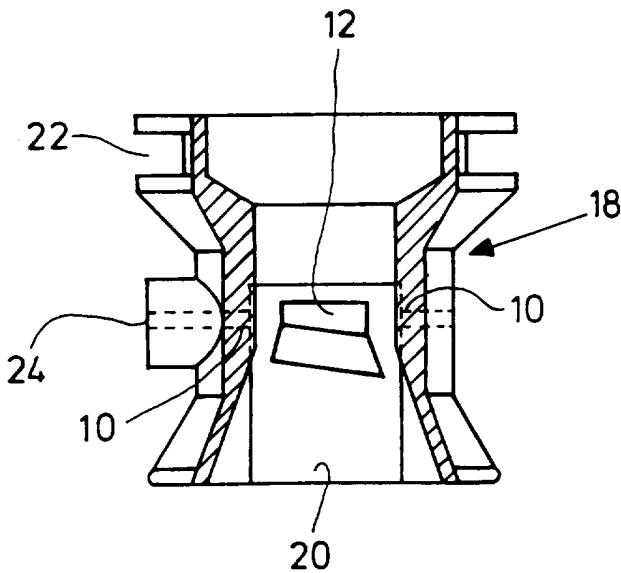


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 96/00035

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B01F 5/04, B05B 1/34

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: B01F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 8700078 A1 (DANFOIL APS), 15 January 1987 (15.01.87), page 6, line 27 - line 29, figures 3,4, abstract	1-3
A	page 6, line 27 - line 29, figure 3.4, abstract	4
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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002/0102000 A1	2002-08-01	US 2002/0102000 A1	2002-08-01

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15/01/87

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DE-A, T- 3688127

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