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71 Applicant: **International Fog Dissolution s.r.l., 14 Via della Musica, I-00144 Roma RM (IT)**

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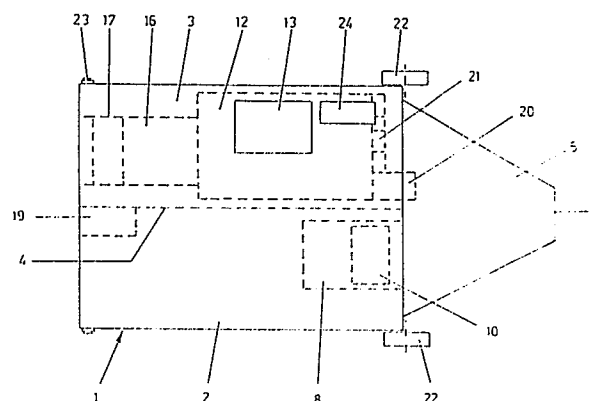
72 Inventor: **Mancori, Giancarlo, 4 via Frascati Colonna, I-00040 Montecompatri RM (IT)**

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74 Representative: **Bazzichelli, Alfredo et al, c/o Società Italiana Brevetti Piazza Poli 42, I-00187 Roma (IT)**

54 **Fog dissolving apparatus.**

57 A fog dissolving apparatus which comprises a first chamber provided with fan means for collecting cold air and with a first opening for introducing said cold air and a second opening for discharging the same, a second chamber, separated from said first chamber by a partition wall, provided with a burner for heating the air coming from a first opening, with a ventilator and with a second opening to allow the air to exit; a third mixing chamber which communicates with the above first and second chambers via the second openings thereof respectively, and provided with an opening for discharging the mixed air.



TITLE: "FOG DISSOLVING APPARATUS"

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DESCRIPTION

The present invention refers to a fog dissolving apparatus. In particular the invention is concerned with an apparatus capable, while working, of progressively and steadily dissolving fog, said apparatus being structured in such a way as to operate on the basis of the mixing and expulsion of hot and cold air at a given rate and temperature.

As is well known, in many areas for long periods of time during the year, the problem of fog formation is widespread and is given great attention.

Fog, which consists of droplets of water with an average radius of 0.010 mm in suspension in the atmosphere, causes poor visibility and image distortion as a result of absorbing and diffusing the light.

The main reasons for fog formation are the presence of condensation nuclei in a high concentration consisting of dust from the soil, particles of sea salts or products from residual combustion and residues from chemical processes; the presence of steam from lakes, rivers, vegetation and from masses of moist air in motion; quick reductions in temperature at sea level or at low atmosphere and wind rate of about 0.5 m/sec.

The above conditions cause the steam to condensate and in turn the fog droplets to be produced.

All the above takes place in a condition characterized by great stability as regards for instance microphysical and thermodynamic phenomena.

In order to dissipate fog, which as already stated causes great danger and problems, particularly in connection with transport by land or by air, the prior art suggests a number of solutions.

5 For instance attempts have been made to solve the problem by introducing chemical substances and salt into the fog in order to coalesce droplets into heavier drops which then fall due to gravity.

10 Another proposal has been the use of big burners to cause fog to evaporate, or the use of micro-waves to cause the relevant area to be heated.

A further solution in the art consists of changing the micro-physical structure of fog banks by using helicopters.

15 None of the above technical solutions has proved to be valid from either a functional or an economical point of view. The reason thereof is the enormous cost of the apparatus necessary to achieve the desired result and moreover the fact that the solution of the problem
20 is not a permanent one.

In particular, the use of burners, besides the relevant costs, causes additional combustion products to be introduced into the atmosphere, while the use of micro-waves requires the employment of great quantities of electrical
25 power.

In view of the above, the importance of an apparatus of the kind proposed according to the present invention should be apparent, which, besides being cheap, presents the great advantage of permanently creating a fog-free
30 area, said area being in balance with the surrounding

areas where fog is still present.

In order to achieve the above objects, the present invention provides an apparatus substantially consisting of two side-by-side chambers for producing and collecting
5 hot and cold air, respectively, and of a preceding chamber for mixing the two air jets and for discharging the mixed air outside.

Therefore, the specific object of the present invention is a fog-dissolving apparatus comprising a first chamber
10 provided with fan means for collecting cold air and with a first opening for introducing said cold air and a second opening for discharging the same; a second chamber, separated from said first chamber by a partition wall, provided with a burner for heating the air coming
15 from a first opening, with a ventilator and with a second opening for allowing hot air to exit; a third mixing chamber which communicates with the above first and second chambers via the second openings thereof respectively, and provided with an opening for discharging
20 the mixed air out of the apparatus.

In a preferred embodiment, said first and second chambers are placed side by side and the third chamber is placed in front of them.

According to the invention, means can be provided
25 for controlling the rate of said fan means and said ventilator, as well as for regulating the temperature of the hot air obtained.

According to a second embodiment of the apparatus according to the invention, only a chamber for producing
30 hot air is provided, having a thermostat with feed-

back on the burner and means for regulating the air temperature, for instance an electronic system of comparison.

5 In addition, the modulation of the discharged air shall take place by means of a fan and a filtering system coupled to each other.

The invention will be described in detail with reference to the accompanying drawings, in which:

10 figure 1 is a schematic top plan view of the apparatus according to the invention;

figure 2 is a first lateral, partially sectioned view of the apparatus according to the invention;

15 figure 3 is a second lateral, partially sectioned view of the side opposite to that of figure 2 of the apparatus according to the invention; and

figures 4 and 5 show, schematically, the working and the dissolving action of the apparatus according to the invention.

20 Referring to figures 1, 2 and 3, the apparatus 1 consists of two chambers 2 and 3 placed side by side, and separated from each other by a partition wall 4 and by a preceding chamber 5.

Said chambers 2 and 3 communicate with the chamber 5 by means of the openings 6 and 7.

25 The chamber 2 is provided with a centrifugal fan 8 which is driven, through the belt 9, by the engine 10.

The air sucked up, through the window 6, is sent by said fan 8 to the chamber 5.

30 Chamber 3 is provided with a rear window 11 through

which air is sucked up and introduced into the combustion chamber 2.

5 The burner 13, placed above said combustion chamber 12 and contained in the cap 14, heats the air which is subsequently introduced, through the opening 7, into the chamber 5.

10 In said chamber 5 the mixing of cold and hot air coming from chambers 2 and 3 takes place, said air being afterwards discharged through the anterior mouth 15 of said chamber 5.

The external cooling of the combustion chamber 12 is obtained via the centrifugal machine 16 driven by the engine 17 through the belt 18.

15 The reference number 19 indicates the fuel tank. The discharge of fumes from the burner 13 takes place through the discharge unit 20 connected to the burner 13 via the tube 21.

20 In order to make more practical its use, the apparatus 1 according to the invention is provided with small wheels 22 and handle 23. Reference number 24 indicates the control board.

25 The exit temperature of cold air, as well as the exit rate of either hot or cold air can be regulated according to the requirements by suitable regulation means.

With reference to figures 4 and 5, the working of the apparatus according to the invention can be better understood.

30 The mixing in chamber 5 of cold air (chamber 2) and the dry hot air (chamber 3) and the discharging of the

mixed air, in a direction tangential to the surface of the earth (figures 4 and 5) is the basis for the working of the apparatus.

5 As a result of mixing the droplets in the cold air evaporate and consequently humid and droplet-free air is introduced into the fog bank.

10 At a distance of about 30 m from the apparatus 1 (indicated by the reference number 25 in figure 5), a micro-turbulence starts, which causes a push upwards as a result of the difference in composition of adjacent layers of air.

The exit rate of air has not to be too high.

15 The discharging of mixed air, i.e. humid air with a pre-determined, not too high temperature, creates the movement shown in figure 5 as a result of which a counter-clockwise circulation takes place which brings droplet-free air into the areas which it crosses, thus modifying the thermal situation and increasing the average temperature.

20 As a result of the vertical push to the right of point 25 of figure 5, the fog free area becomes larger.

The natural tendency of surrounding fog to fill the free area is prevented by the balance due to the continuous emission of air from the apparatus.

25 The present invention has been described by way of examples of preferred embodiments. The invention however is not limited to the described examples, but comprises any alternative and variation thereof.

CLAIMS

1. A fog dissolving apparatus characterised by the fact that it comprises a first chamber provided with fan means for collecting cold air and with a first opening for introducing cold air and a second opening for discharging the same; a second chamber, separated from said first chamber by a partition wall, provided with a burner for heating air coming from a first opening, with a ventilator and with a second opening for allowing hot air to exit; a third mixing chamber which communicates with the above first and second chambers via the second openings thereof respectively, and provided with an opening for discharging the mixed air out of the apparatus.

2. Fog dissolving apparatus according to claim 1, characterised by the fact that said first and second chambers are placed side by side, the third chamber being in front of them.

3. Fog dissolving apparatus according to claim 1, characterised by the fact that means are provided for regulating the rate of said fan means and said ventilator.

4. Fog dissolving apparatus according to claim 1, characterised by the fact that means are provided for regulating the temperature of hot air.

5. Fog dissolving apparatus according to claim 1, characterised by the fact that it is provided with a sole chamber for producing hot air, having a thermostat with feed back on the burner and means for regulating the air temperature.

6. Fog dissolving apparatus according to claim 5,

characterised by the fact that said means for regulating air temperature consist of an electronic system of comparison.

5 7. Fog dissolving apparatus according to in claim 5, characterised by the fact that the modulation of the discharged air takes place by means of a fan and a filtering system coupled to each other.

FIG.1

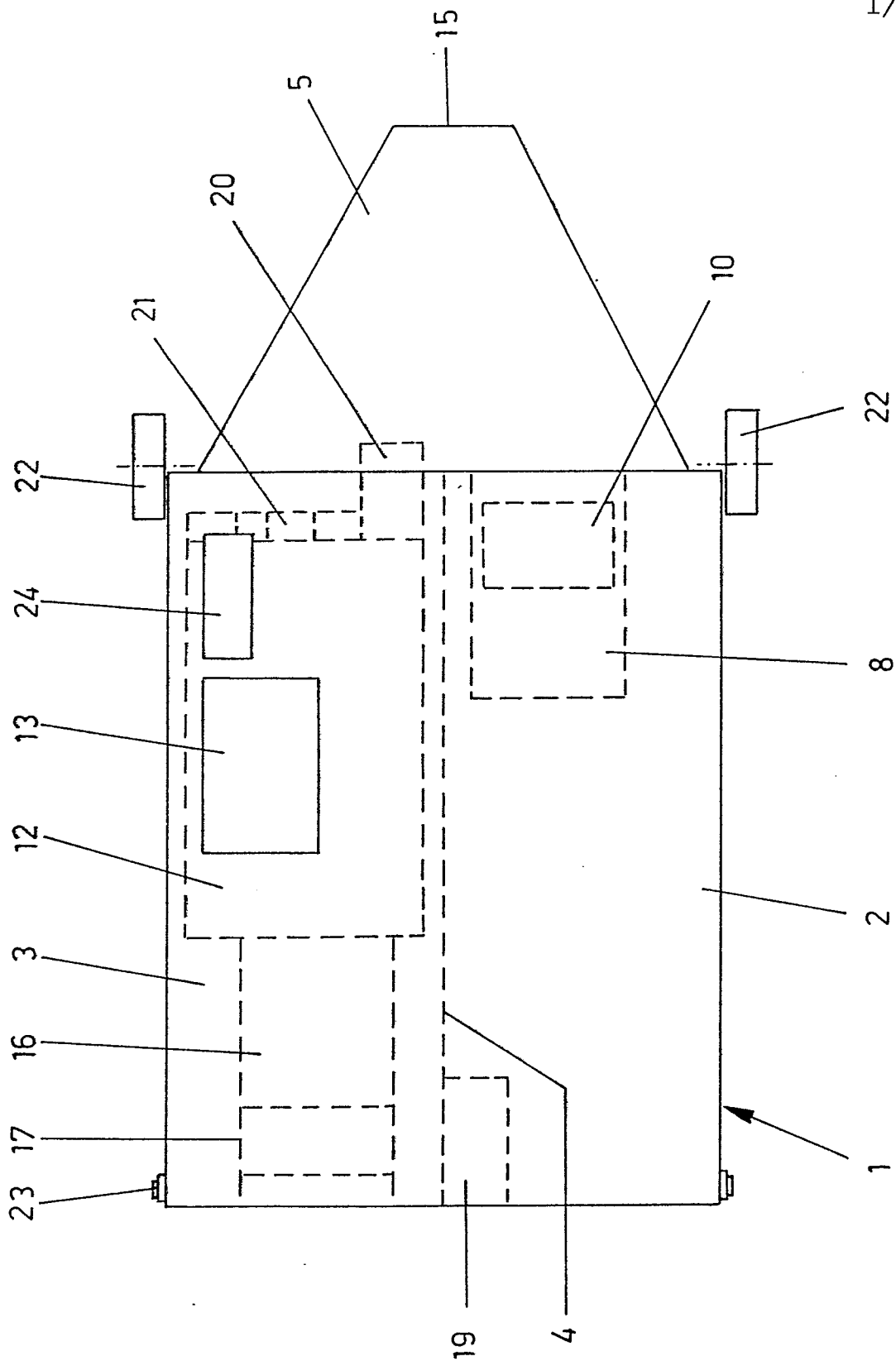


FIG. 2

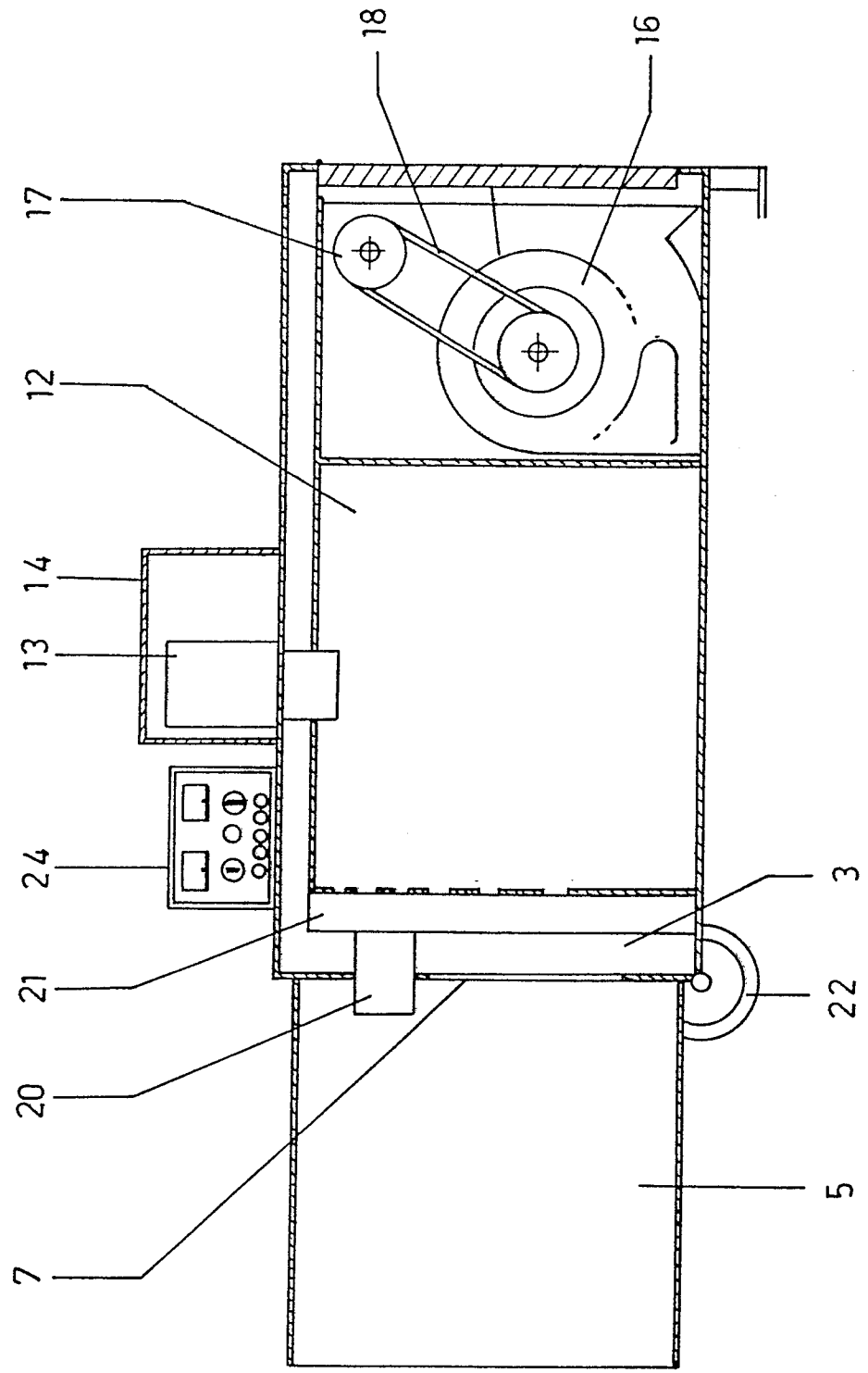
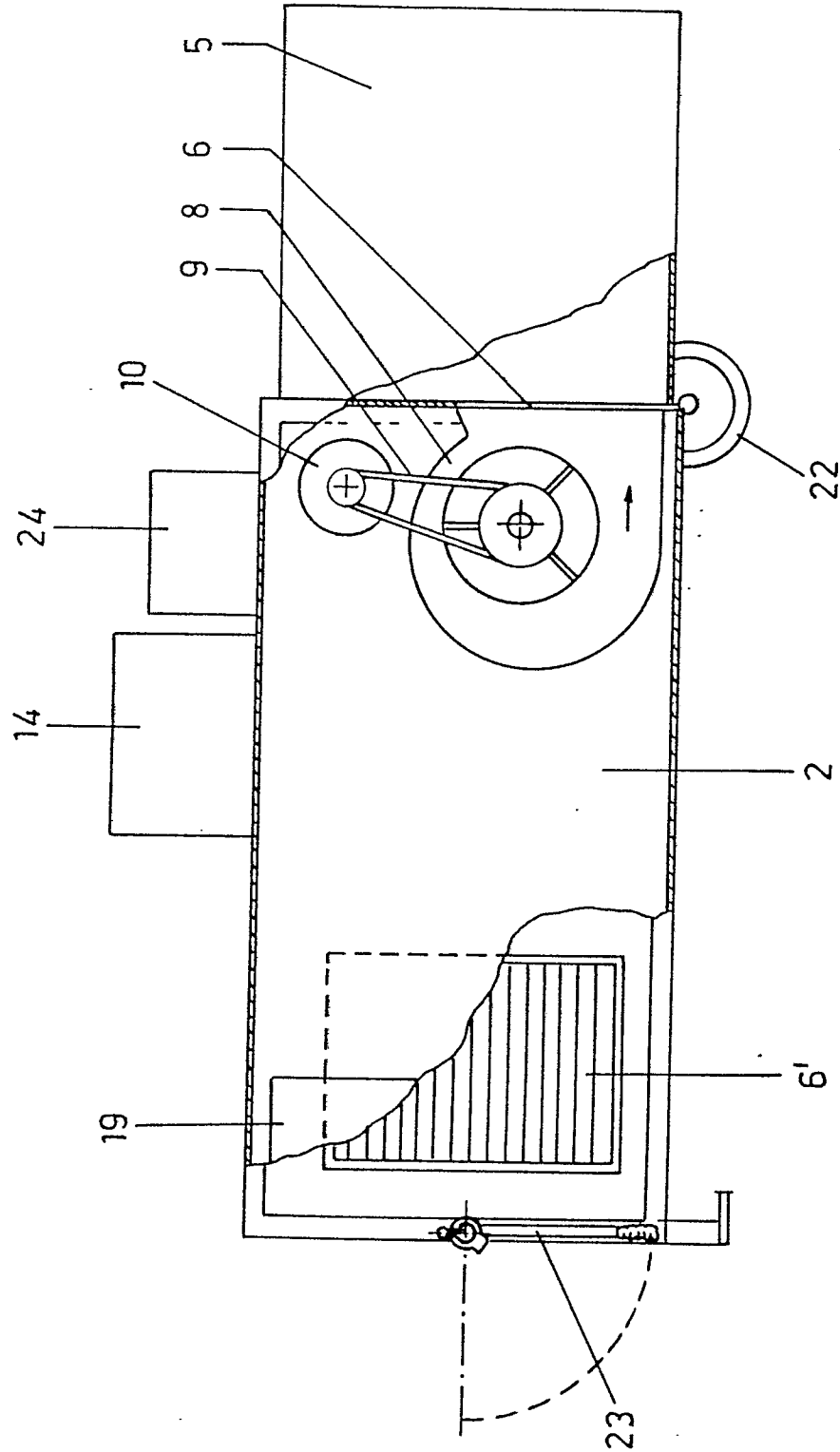


FIG. 3



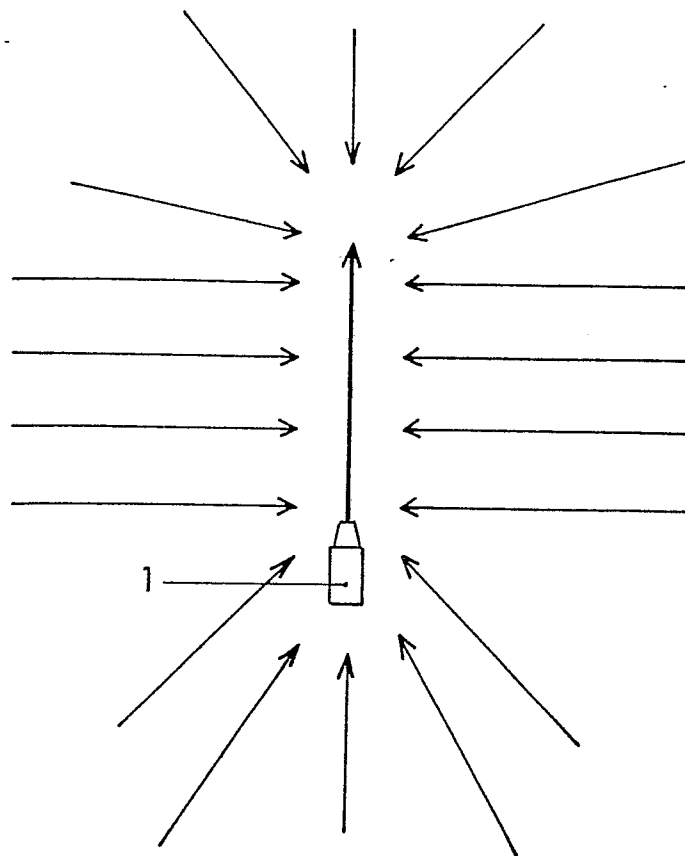


FIG. 4

