Dec. 10, 1957 L. F. BLEAMASTER 2,815,982

APPARATUS FOR DISPELLING FOG

Filed Nov. 6, 1953

FIG. 1.

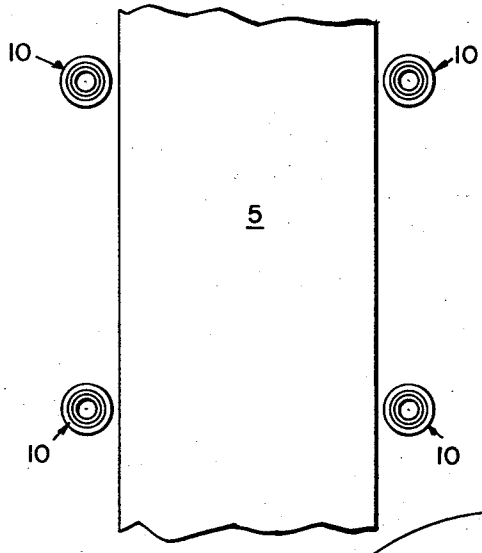


FIG. 2.

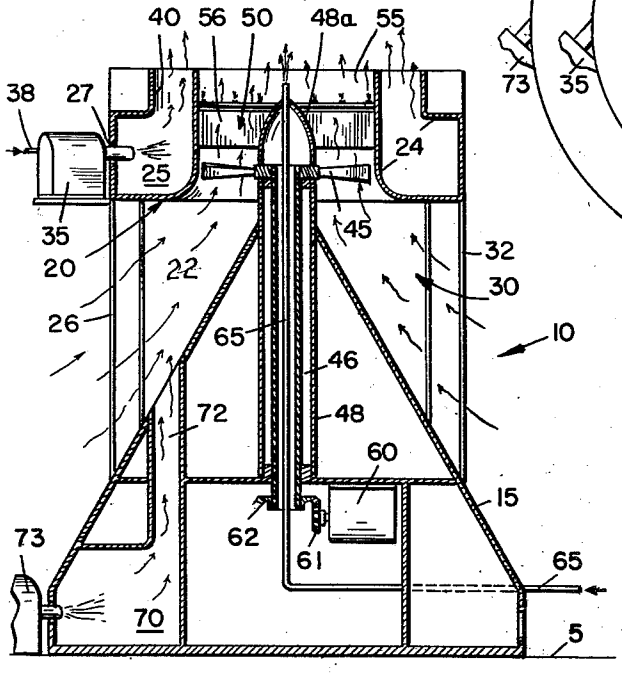
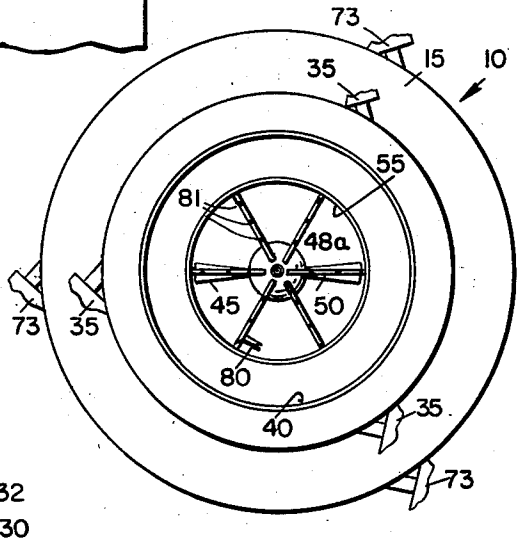


FIG. 3.



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APPARATUS FOR DISPELLING FOG

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3 Claims. (Cl. 299—28)

This invention has to do with methods and apparatus for dispelling or eliminating fog.

As is well known, the dispelling or elimination of fog has long been a serious problem for air fields upon which airplanes must land and from which they must take off. While various proposals for fog elimination have been proposed, none of which I am aware has been practicable and dependable, at least within reasonable limits of cost.

It is an object of my invention to provide an apparatus for dispelling fog which is not only highly effective but which also may be carried out at a reasonable cost.

Fog consists of small water particles or droplets carried in suspension in the air, and in carrying my invention into practice, I proceed by drawing the fog laden air into my apparatus, or equivalent apparatus, at spaced points along the area from which fog is to be dispelled, such as an airplane landing strip, and then propel the drawn-in fog laden air upwardly in a concentrated stream into air strata of different temperature and with considerable force, to effect a coalescing action of the fog particles and, as a result of this action, to precipitate the fog and cause the precipitation to drop to the ground like rain. This action may be enhanced by heating the drawn-in fog laden air in my apparatus as it is propelled upwardly, and, in some instances, the desired action may be further enhanced by introducing into the upwardly propelled stream some agent having the characteristic of inducing coalescence of the water droplets.

Without intending thereby to limit the broader scope of my invention, except as may appear from the appended claims, but rather for the purpose of enabling those working in this art to fully understand my invention, I shall now describe a presently preferred apparatus and method for carrying out my invention, for which purpose I shall refer to the accompanying drawings, wherein—

Fig. 1 is a plan view of an airplane landing strip equipped with my apparatus,

Fig. 2 is an enlarged medial vertical section of a preferred form of apparatus for carrying out my invention, and

Fig. 3 is a top plan view of Fig. 2.

In Fig. 1, I show an airplane landing and take-off strip 5 along each side of which I dispose a plurality of my apparatus 10 in spaced relation to each other. The relative spacing of the apparatus will depend upon the capacity of each apparatus, it being essential that the spacing and capacity be such that substantially all of the fog laden air overlying the landing strip to a ceiling of at least approximately two to three hundred feet be drawn into the apparatus.

A preferred form of apparatus is shown in Figs. 2 and 3 and comprises a frusto-conical base member 15, a casing 20 providing a collecting chamber or station 22 for collecting the fog laden air, walls 24 forming an annular combustion chamber 25 and defining a restricted outlet 55 and suitable bracing 26.

The casing 20 is in the nature of a framework which

provides an annular inlet 30 around its periphery, which inlet is interrupted only by the uprights 32 and 26.

Combustion chamber 25 has fuel burners 35 and one or more air inlets 27, each of which inlets may be controlled by a conventional damper (not shown). The combustion chamber has an annular upwardly opening outlet 40. A conduit 38 supplies fuel to the burners.

A propeller 45 is fixed on an upright tubular shaft 46 concentrically disposed in a tubular housing 48. The housing has a bullet shaped top 48*a* supported by a spider 50. The spider 50 forms radially arranged, vertically disposed vanes or foils 56 to properly axially direct the outmoving stream of fog laden air.

Shaft 46 is driven by a motor 60 through beveled gears 61, 62.

For introduction into the outmoving fog laden air stream of a suitable coalescing inducing agent under pressure such, for instance, as CO_2, or lime dust, or silver iodide, I provide a conduit 65 leading from a source of supply (not shown) and extending upwardly in and coaxially with the housing 48, discharging through the top 48*a* of the housing. A second supply pipe for such agents is shown at 80 in the outlet and carries spray members 81. I may provide one or more auxiliary combustion chambers 70 about the base, each communicating with the chamber 22 through an outlet 72, and having a burner 73.

Operation is as follows. The fog laden air blanketing the landing strip 5 is drawn into the chamber 22 of each of the respective machines 10 by operation of the propeller 45. As this air is drawn in and propelled upwardly through the outlet 55, it is momentarily compressed and flows in contact with the walls 24 defining the combustion chamber and becomes heated, and other fog laden air is induced into the stream moving into the collecting chamber, providing a continuous cycling operation. As the stream is propelled upwardly, it is initially surrounded by the stream of the products of combustion moving upwardly through outlet 40, which products of combustion gradually become intermingled with the upwardly moving air stream as the stream fans out. The resultant agitation of the upwardly moving fog laden air stream and its movement into air strata of different temperatures causes the fog particles to coalesce into larger particles and eventually to precipitate and fall to the earth rather than remaining in suspension in the air.

There are times when the ground temperature is high enough that it will be unnecessary to introduce the heat by means of the combustion chambers.

The coalescing action may also be enhanced under some atmospheric conditions by chilling the air as it is propelled upwardly, as by introducing into it CO_2.

It will be apparent that by my invention I have provided a method and apparatus which, within a very short time after being placed in operation, will dispel the fog from a given area by causing the moisture particles constituting the fog to coalesce to the point where they will no longer be capable of remaining in suspension in the air and will thus precipitate out and fall to the ground as rain.

I claim:

1. Apparatus for dispelling fog from an airplane runway comprising a plurality of air collecting and propelling units disposed at relatively spaced points along each side of said runway, each of said units comprising walls providing a collecting chamber having an annular inlet in its side and having a vertically upwardly opening restricted outlet, a power driven propellor disposed axially in said outlet, walls defining an annular upwardly opening combustion chamber surrounding said outlet, and heating means associated with said combustion chamber.

2. The apparatus of claim 1 which additionally includes

a conduit having an outlet disposed in and coaxially with said outlet, and means for supplying a coalescing inducing agent to said conduit under pressure.

3. In apparatus for coalescing and precipitating moisture from moisture-laden air, a body providing an air collecting chamber having a surrounding annular inlet opening and an axial discharge outlet at its top, a first annular wall defining a vertically disposed restricted air passageway communicating with said outlet, a second annular wall surrounding said first wall in radially spaced relationship thereto and defining therewith an annular combustion chamber having an annular vertically upwardly opening discharge outlet surrounding the said

passageway, combustion means in said combustion chamber, and a power driven propeller mounted in said passageway to rotate about the longitudinal axis thereof.

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