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SKYWRITING APPARATUS

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4 Claims. (Cl. 244—1)

My invention relates to the formation of smoke trails from an aircraft in flight, and to improvements in the method and apparatus used in forming same. It relates more particularly to the discharge of finely divided solid substances into the exhaust channel of an aircraft motor and thence discharged into the atmosphere in the form of a visible smoke trail.

It is well known that aircraft can be utilized, when properly maneuvered in flight, so that a regulated trail of smoke can be made to form signs, letters, characters or words visible to observers on the ground. Skywriting is an old art and many flights have been made for advertising purposes in which the heat of the motor exhaust pipe was used to vaporize a liquid in producing a visible smoke trail. In one proposal, the powdered carbon is mixed with a vaporized liquid by allowing the powdered material to fall by gravity from a receptacle and be added near the outlet end of the exhaust pipe, but only after the liquid has been vaporized. It is also known to use a device to positively withdraw a liquid or powdered material from a container placed in an aircraft so as to produce a uniform cloud of smoke or gas while in flight, but the liquid or powdered material is not vaporized by passing through the exhaust pipe of the motor.

The object of my invention is to provide a device that will insure a rapid and uniform withdrawal of a powdered material from a container placed in an aircraft.

Another object of my invention is to provide a means for discharging the powdered material and controlling the feed thereof into the exhaust pipe of an aircraft motor at such a point that the material will be subjected to heat for vaporization.

It is a further object of my invention to use a paranitraniline dye for producing a colored smoke and a means of regulating the number and length of such smoke trails.

These and other objects will be more clearly understood from the following description and accompanying drawing which forms a part of this application, and in which drawing:

Figure 1 is side view and part sectional view of the container showing the position of the air pipe in passing through the container and the relative position of these parts to the exhaust

the drawing, the closed container 1 is mounted at any convenient place in the aircraft, preferably as shown in this instance, in the front cockpit. 1A represents a lid or cover for the opening in the container. The pipe 2 extends perpendicularly through the center of container 1, the lower end terminating in and in communication with the motor exhaust pipe. 2A represents an ordinary conventional type of shut off valve. A valve chamber 3 intersects the pipe 2 exterior of and below the container 1 and the valve shutter 3A is adapted to open or close pipe 2 by the operation of wire 4 and springs attached to valve chamber 3 and shutter 3A. The pipe 2 extends upwardly through the container 1 and terminates in a funnel shaped mouth 5 located exteriorly of and above container 1. At a point within and near the lower part of container 1, the pipe 2 is provided with suitable port openings 6, which permit the contents of container 1 to enter the exhaust pipe at the will of the operator controlling the valve shutter 3A in valve chamber 3.

In actual operation the powdered material surrounds the pipe which extends through the container and can only be discharged into the motor exhaust pipe through the port openings in the pipe near the lower part of the container, when the valve shutter is withdrawn and the shut off valve in the pipe above the container is in an open position. The operator may withdraw the shutter by any one of a number of means other than the one described in this application, which is by pulling a wire connected to the valve shutter, thereby opening the passageway into the exhaust pipe. A swift current of air, derived from the forward motion of the aircraft, enters the pipe through the funnel and produces a suction effect when the passageway to the exhaust pipe is opened by withdrawing the valve shutter, whereby the powdered material is drawn downwardly through the port openings of the pipe, and is readily released and positively fed into the exhaust chamber.

This suction effect is further augmented by the escaping exhaust gases passing through the exhaust pipe, the result being insurance of a rapid and positive feed of the powdered material into the exhaust pipe.

It is very apparent that the quantity of powdered material fed per unit of time may be varied