June 11, 1946. G. J. HOLTHAM 2,401,761

SMOKE SCREEN GENERATOR

Filed May 21, 1943

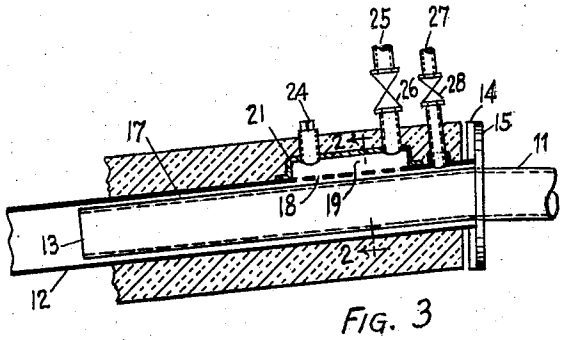


FIG. 3

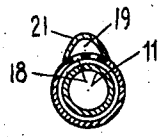


FIG. 2

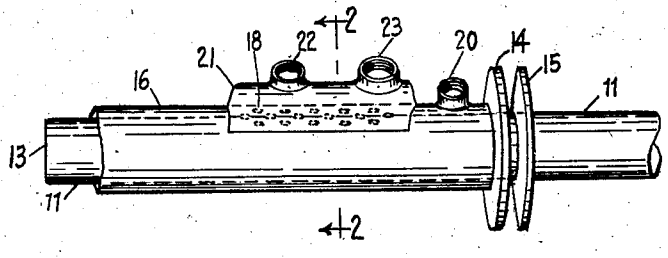


FIG. 1

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SMOKE SCREEN GENERATOR

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6 Claims. (Cl. 252—359)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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This invention relates to a smoke generator and has for an object to provide an improved smoke screen generator especially useful on small boats but equally adaptable for use on larger boats or vessels or other vehicles which utilize hot exhaust pipes as a part of their regular equipment.

A further object of this invention is to provide a smoke screen generator for laying down a smoke screen about the boat or vehicle to which it is applied, thereby enabling the vehicle to quickly generate a smoke screen for hiding itself as well as for concealing other vehicles or objects from enemy observation.

A further object of this invention is to provide an efficient smoke generator which may utilize either fuel oil or fuel oil and water for providing a smoke or smoke and steam cloud for concealment purposes.

With the foregoing and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter described and illustrated in the drawing in which:

Fig. 1 is a perspective view of the smoke screen generator of this invention;

Fig. 2 is a sectional view on line 2—2 of Figs. 1 and 3; and

Fig. 3 is a longitudinal and partly sectional view showing the inner details of the smoke screen generator.

There is shown at 10 the smoke screen generator of this invention. This smoke screen generator 10 includes the conventional exhaust pipe 11 attached in the usual manner to the engine (not shown) of the vehicle or boat on which this invention is being used.

No muffler to be used with this installation. Instead of discharging to the atmosphere, this exhaust pipe 11 is led into a somewhat larger pipe 12 which will be supported around the end 13 by suitable flanges 14 and 15, which serve to space the end section 13 from the inner surface of the end 16 of the exhaust pipe 11, thus providing an annular chamber 17 between the concentric ends of the exhaust pipes 11 and 12. This end 16 of the outer pipe 12 is provided with a plurality of small perforations 18 and with a threaded nipple 20.

Adapted to be placed over and to completely enclose the apertures 18 is a chamber member 21 which may be made of a small semi-cylindrical section of pipe having its ends closed so that when it is mounted on the upper side of the pipe 12 over the apertures 18, it will make a gas tight fit therewith. It may be permanently

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welded thereto or, if desired, could be secured thereto in any other suitable manner, as by metal straps encompassing both the chamber 21 and the pipe 12.

Extending upwardly from the chamber member 21 are two threaded nipples 22 and 23. The nipple 22 has threaded therein a clean-out plug 24 allowing access to the interior chamber 19 of chamber member 21. Threaded nipple 23 has an oil supply pipe 25 threaded therein, a control valve 26 being secured in the pipe 25 adjacent the chamber 21. The nipple 23 extending to the end of pipe 12 directly to the chamber 17 is provided with a water pipe 27 and a control valve 28 therein.

In operation, the outer concentric pipe 12 is mounted over the end 13 of the vehicle exhaust pipe 11 and supported thereabout by means of the flanges 14 and 15 so as to provide the annular chamber 17 therebetween. When it is desired to generate a smoke screen the valves 26 and 28 are operated as desired so to feed fuel oil thereto. The oil from the pipe 25 is fed into the chamber 19 and lands on the hot outer end of the pipe 12, thus receiving preliminary heating, then enters through the perforations 18 into the chamber 17 and contacts against the hot end 13 of the exhaust pipe 11, thus being changed into vapor or smoke. When the valve 28 of the water pipe 27 is manipulated, water entering from pipe 27 into the same chamber 17 is turned into steam by contacting the hot end 13 of the exhaust pipe 11. By proper manipulation the proportions of steam to smoke may be controlled if desired or the steam may be entirely omitted by keeping valve 28 closed as may be desired.

The combustion gases which pass through the pipe 11 continue through the end 13 through the pipe 12 to wherever it may be directed at an edge of the vehicle or boat on which it is mounted. As the combustion gases leave the end 13 of exhaust pipe 11, they produce a Venturi effect, thus creating a vacuum about the ends of chamber 17 and tending to draw in the smoke or mixture of smoke and steam produced in the chamber 17, thus mixing the smoke with the combustion gases which then discharge at the outer end of the pipe 12 to provide the smoke screen desired.

In the case of small boats, gasoline engines are generally used so that exhaust pipe 11 would have combustion gases therefrom, but the invention is equally applicable when the engines of the vehicle are Diesel engines using fuel oil as the source

of power so long as the combustion gases reach the end 13 of the pipe 11 in a sufficiently heated condition.

The smoke screen thus generated is thereby utilized in any conventional manner already well-known to the art for concealing either the vehicle generating the same or concealing other vehicles or objects from enemy observation.

Other modifications and changes in the number and arrangement of the parts may be made by those skilled in the art without departing from the nature of the invention, within the scope of what is hereinafter claimed.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What is claimed is:

1. A smoke screen generator comprising an exhaust pipe, a concentric pipe secured about said exhaust pipe adjacent its end to provide an annular chamber therebetween, and means for feeding smoke generating material through said concentric pipe onto said exhaust pipe to vaporize the smoke generating material.

2. A smoke screen generator comprising an exhaust pipe, a concentric pipe secured about said exhaust pipe adjacent its end to provide an annular chamber therebetween, and means for feeding smoke generating material through said concentric pipe onto said exhaust pipe to vaporize the smoke generating material, the edge of said exhaust pipe being so spaced from the inner surface of said concentric pipe as to provide a Venturi effect and create a vacuum drawing the vaporized smoke generating material into the combustion gases passing therethrough.

3. A smoke screen generator comprising an exhaust pipe, a concentric pipe secured about said exhaust pipe adjacent its end to provide an annular chamber therebetween, and means for feeding smoke generating material through said concentric pipe onto said exhaust pipe to vaporize the smoke generating material, the edge of said exhaust pipe being so spaced from the inner surface of said concentric pipe as to provide a Venturi effect and create a vacuum drawing the vaporized smoke generating material into the combustion gases passing therethrough, said feeding means including a chamber member secured to the outer surface of said concentric pipe over said inner extending exhaust pipe, said concentric pipe being provided with perforations leading from the chamber of said chamber member through said concentric pipe to said annular chamber between said concentric pipe and said exhaust pipe.

4. A smoke screen generator comprising an exhaust pipe, a concentric pipe secured about said exhaust pipe adjacent its end to provide an annular chamber therebetween, and means for feeding smoke generating material through said concentric pipe onto said exhaust pipe to vaporize the smoke generating material, the edge of said exhaust pipe being so spaced from the inner surface of said concentric pipe as to provide a Venturi effect and create a vacuum drawing the vaporized smoke generating material into the combustion gases passing therethrough, said feeding means including a chamber member secured to the outer surface of said concentric pipe over said inner extending exhaust pipe, said concentric pipe being provided with perforations leading from the chamber of said chamber member through said concentric pipe to said annular chamber between the concentric pipe and said exhaust pipe, and a valved conduit discharging into said chamber member.

5. A smoke screen generator comprising an exhaust pipe, a concentric pipe secured about said exhaust pipe adjacent the end to provide an annular chamber therebetween, and means for feeding smoke generating material through said concentric pipe onto said exhaust pipe to vaporize the smoke generating material, the edge of said exhaust pipe being so spaced from the inner surface of said concentric pipe as to provide a Venturi effect and create a vacuum drawing the vaporized smoke generating material into the combustion gases passing therethrough, a chamber member secured to the outer surface of said concentric pipe over said inner extending exhaust pipe, said concentric pipe being provided with perforations leading from the chamber of said chamber member through said concentric pipe to said annular chamber between said concentric pipe and said exhaust pipe, a valved conduit discharging into said chamber member, and a water pipe leading directly through the said concentric pipe to said annular chamber between said contric pipe and said exhaust pipe end.

6. A smoke screen generator comprising an exhaust pipe, a concentric pipe secured about said exhaust pipe adjacent its end to provide an annular chamber therebetween, and means for feeding smoke generating material through said concentric pipe onto said exhaust pipe to vaporize the smoke generating material, the edge of said exhaust pipe being so spaced from the inner surface of said concentric pipe as to provide a Venturi effect and create a vacuum drawing the vaporized smoke generating material into the combustion gases passing therethrough, a chamber member secured to the outer surface of said concentric pipe over said inner extending exhaust pipe end, said concentric pipe being provided with perforations leading from the chamber of said chamber member through said concentric pipe to said annular chamber between said concentric pipe and said exhaust pipe, a valved conduit discharging into said chamber member, and a clean-out plug secured through said chamber member.

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