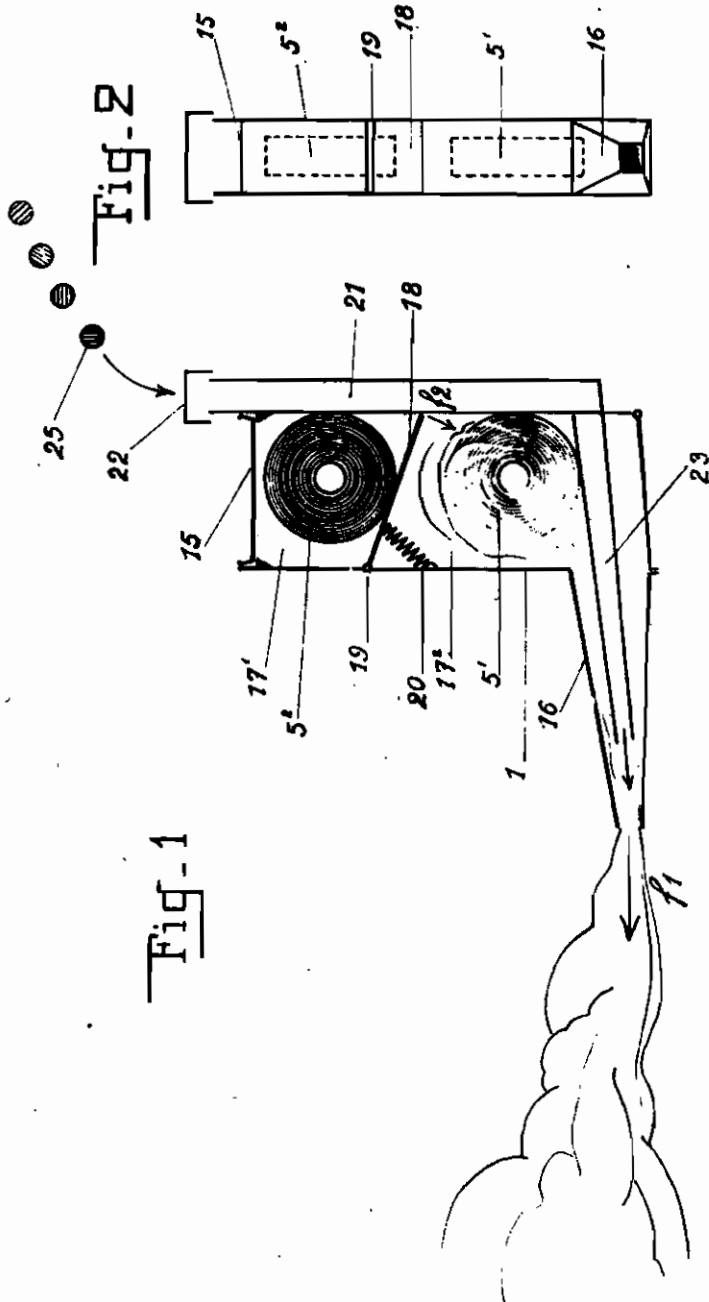


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Filed April 2, 1941

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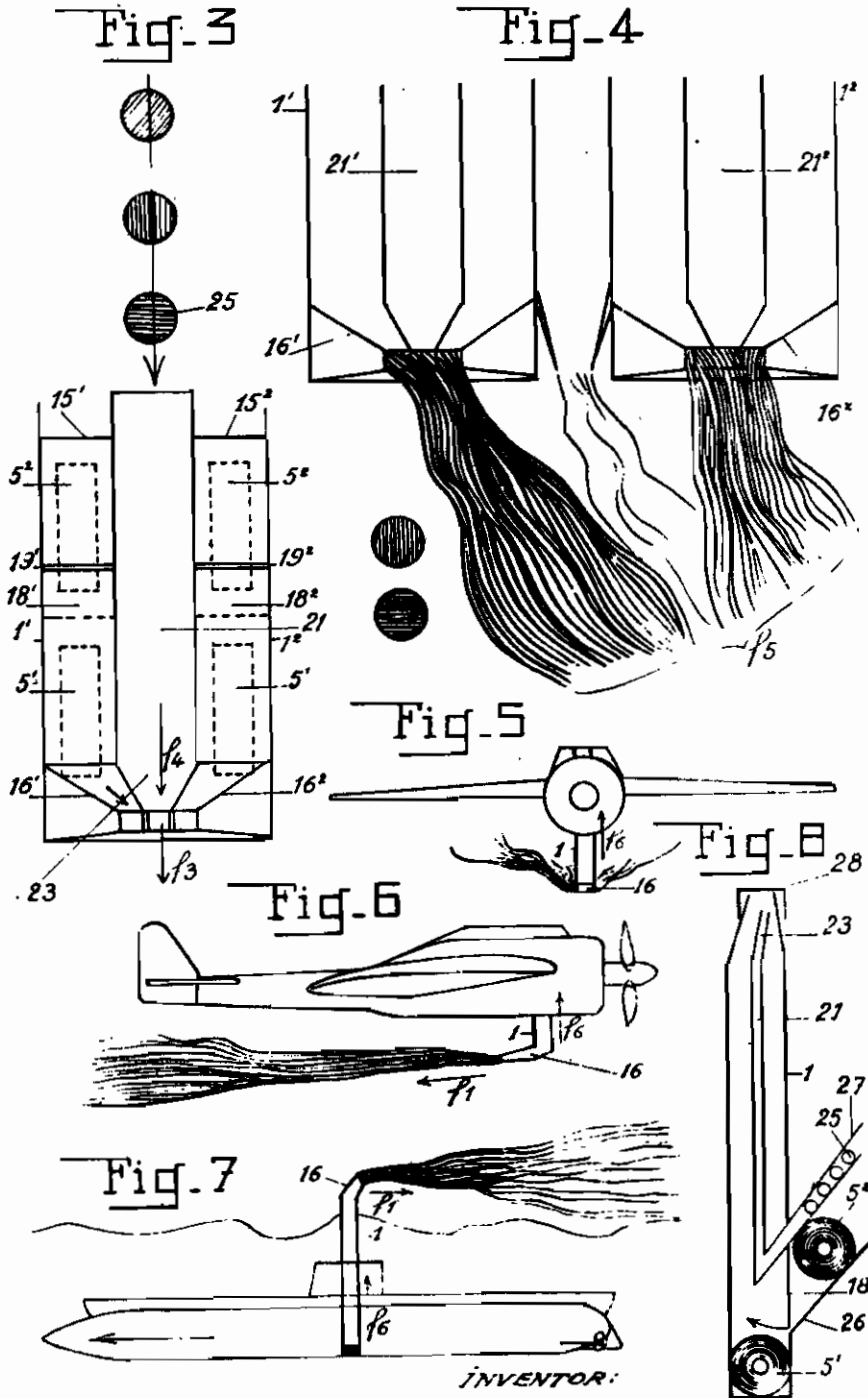


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# ALIEN PROPERTY CUSTODIAN

## SMOKE PRODUCING MEANS

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This invention relates to smoke-producing means and more particularly to such means which are adapted for producing artificial clouds of smoke.

The chief object of the invention is to improve smoke-producing devices in order to insure the production of smoke in a continuous manner during the time desired by the operator.

Another object of the invention is to improve the said devices in order to enable them to produce smokes having a predetermined coloration which can be modified by the operator according to his own desire during the operation.

The above mentioned objects are attained through the characteristic features resulting from the description as given hereunder.

Devices according to the invention are shown by way of examples in both appended drawings, in which:

Figure 1 is an axial vertical sectional view showing a device made according to the invention.

Figure 2 is a front elevation of this device.

Figures 3 and 4 are vertical sectional views of other devices made according to the invention.

Figure 5 is a front view of an aircraft provided with a device made according to the invention.

Figure 6 is a side elevational view of this aircraft.

Figure 7 is a diagrammatical view of a submarine boat provided with a device made according to the invention.

Figure 8 is a detail view showing the device mounted in the submarine of Figure 7.

The device shown in Figures 1 and 2 comprises a vessel 1 forming a magazine closed in its upper part by a removable cover 15 and terminated in its lower part by a master nozzle 16.

The inner chamber 17 of the vessel 1 is divided into two elementary chambers 17<sup>1</sup>—17<sup>2</sup> by a trap 18 pivotally secured at 19 to the vessel 1 and urged by a return spring 20 operating as a compression spring.

A tube 21 with a cover 22 is located on the side of the vessel 1 and terminated by an auxiliary nozzle 23 opening into the axis of the master nozzle 16.

The operation of this device is as follows:

A first roll 5<sup>1</sup> of combustible material, formed for example of old moving picture films, is introduced into the vessel 1 after removing the cover 15, whereafter the said roll 5<sup>1</sup> is set on fire, thus producing a jet of smoke which is ejected along 17<sup>1</sup> through the master nozzle 16.

When the combustion of the roll 5<sup>1</sup> has gone

sufficiently far, a second roll 5<sup>2</sup> is introduced into the chamber 17<sup>1</sup> of the vessel 1 on the trap 18. This trap swings along 17<sup>2</sup> about its link 18 while compressing its spring 20, thus allowing the roll 5<sup>2</sup> to fall from the charging chamber 17<sup>1</sup> into the combustion chamber 17<sup>2</sup>; the said roll 5<sup>2</sup> is then set on fire by itself and further ejects smokes through the master nozzle 16.

During the combustion of the roll 5<sup>2</sup> a third roll 5<sup>3</sup> is introduced into the charging chamber 17<sup>1</sup> and so on; thus a continuous ejection of smoke along 17<sup>1</sup> through the master nozzle 16 is obtained; during the whole operation the trap 18 separates the charging chamber 17<sup>1</sup> from the combustion chamber 17<sup>2</sup>, thus avoiding the flowing back of the smoke into the charging chamber 17<sup>1</sup> and into the upper opening of the vessel 1.

During the combustion of the rolls 5<sup>1</sup>—5<sup>2</sup> etc. and the ejection of their white smoke, balls 25 of materials producing various colours may advantageously be introduced into the tube 21 after removing the cover 22, the said balls falling into the same tube 22 and producing a coloured smoke which is brought by the nozzle 23 into the axis of the nozzle 16.

According to the invention a device is thus obtained which offers the two following advantages:

(a) a continuous production of artificial smoke;

(b) an operation which is very easily adaptable since the operator may especially cause the production of artificial smoke to last as long as he desires by further introducing rolls 5<sup>1</sup>—5<sup>2</sup> into the vessel 1.

Furthermore the operator can introduce products 25 of various colorations into the tube 21, thus producing smoke jets of various colours at his own desire, so that he is especially able to give any desired signal.

Various modifications may be brought to the above described device, which is given merely by way of example; it is more particularly possible (see Figure 3) to provide a plurality of vessels 1<sup>1</sup>—1<sup>2</sup> forming magazines and mounted side by side; each of these magazines is formed in the same manner as shown in Figures 1 and 2 (cover 15<sup>1</sup>—15<sup>2</sup>, master nozzles 16<sup>1</sup>—16<sup>2</sup>, trap 18<sup>1</sup>—18<sup>2</sup>—19<sup>1</sup>—19<sup>2</sup>).

The rolls 5<sup>1</sup>—5<sup>2</sup> . . . are successively introduced into the vessels 1<sup>1</sup>—1<sup>2</sup> forming magazines, so that the combustions in the magazines are out of phase with another, the combustion in one magazine being almost finished while the combustion in the other magazine begins. Thus the ejection of continuous smoke clouds is obtained.

The tube 21 for the introduction of balls 25 of

materials producing coloured smokes is arranged in the inner part, in the middle of the magazines 1<sup>1</sup>—1<sup>2</sup> etc.

Thus a unit is obtained which works in similar conditions as the device shown in Figures 1 and 2 and permits to obtain along  $f^3$  a jet of artificial smoke in which smoke coloured at the own desire of the operator are mixed along  $f^4$ .

Figure 4 shows an embodiment of the devices according to Figure 3; each magazine 1<sup>1</sup> 1<sup>2</sup> etc. carries itself and along its axis a tube 2<sup>1</sup>—2<sup>2</sup> etc. for the introduction of balls 25 producing coloured smoke; thus it is possible to obtain along  $f^3$  a complex cloud of smoke formed of veins of elementary smoke jets of various colorations; it is possible to form a cloud composed of three smoke jets arranged close to another: blue, white, red; it is also possible to form all the ranges of coloured and combinations of colours as desired, corresponding to a signal code established in advance.

The device made according to the present invention can be mounted either stationary or on any vehicle; it is possible, for instance, to mount devices of this kind on an aircraft or on a man of war.

Figures 5 and 6 show an aircraft provided with a device arranged for producing artificial clouds of smoke according to the present invention.

This device comprises the magazine vessel 1 and the master nozzle 18 as described and shown in Figures 1 and 2, the said nozzle producing the artificial clouds of smoke along  $f^1$ .

The whole device is so mounted that it can slide in the body of the aircraft along the arrow

$f^6$ , so that it is possible to retract the device into the inner part of the said body for normal flying or, on the contrary, to cause this device to project out of the body for its operation for producing smoke.

Figures 7 and 8 show a submarine boat 8 provided with a magazine vessel 1 which receives the roll 5<sup>1</sup> of combustible material in its lower part and which is provided with a side branch 26 having a closing trap 18 which retains the following roll 5<sup>2</sup>; it is thus possible to obtain a continuous ejection of smoke as already described with reference to Figure 1; the roll 5<sup>1</sup> burns and produces smoke jets which are ejected through the nozzle 16; during this time the roll 5<sup>2</sup> is introduced into the branch 5<sup>6</sup> so that it takes then the place of the roll 5<sup>1</sup> at the end of the combustion.

The tube 21 for the production of coloured smoke is bent in its lower part and terminates outwardly in the form of a funnel 27 which receives the balls 25 of materials producing coloured smoke.

The master nozzle 16 and the auxiliary nozzle 23 are closed by a cover 28 which insures a tight joint.

The whole device which is thus formed is mounted in the hull of the submarine so that it can slide vertically in Figure 6 and in the reverse direction, so that it is possible either to bring the whole device above sea-level and to produce the artificial smoke there or, on the contrary, to retract this device into the hull of the submarine when the production of smoke is no longer wanted.

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