CONVENTION OR NON-CONVENTION APPLICATION FOR A PATENT OR PATENT OF ADDITION

I/We (a) NICO-PYROTECHNIK HANNS-JURGEN DIEDERICH KG.

(b) Bei der Feuerwerkerei 4
2077 Trittau
Germany

hereby apply for the grant of a (c) patent/patent of addition for an invention entitled (d) PROCESS FOR THE PRODUCTION OF DENSE CLOUDS FOR CAMOUFLAGE

which is described in the accompanying (e) provisional/complete specification.

I/We request that the term of the patent of addition be the same as that of the patent for the main invention or so much of the term of the patent for the main invention as is unexpired.

This application is a Convention application and is based on the following application or applications for a patent or patents or similar protection made in the following country or countries on the following date or dates:

(f) P 27 29 055.7 in (g) Germany on (h) June 28, 1977.

(i) My/Our address for service is care of CLEMENT HACK & CO., Patent Attorneys, 140 William Street, Melbourne, Victoria, 3000, Australia.

(j) Dated this 26TH day of JUNE 1978.

(k) NICO-PYROTECHNIK HANNS-JURGEN DIEDERICH KG.

CLEMENT HACK & CO.
DECLARATION IN SUPPORT OF A CONVENTION OR NON-CONVENTION APPLICATION FOR A PATENT OR PATENT OF ADDITION

In support of the application No. (a) made by (b) NICO-PyroTECHNIK, HANNS-JURGEN DIEDERICHS KG...

for a patent/patent of addition for an invention entitled (c).

PROCESS TO PRODUCE DENSE CLOUDS FOR CAMOUFLAGE...

1. (d) Hanns-Jurgen Diederichs (General Manager).

2. (e) Bei der Feuerwerkerei 4 2077 Trittau Germany...

I do solemnly and sincerely declare as follows:—

1. (g) I am authorized by the abovementioned applicant for the patent/patent of addition to make this declaration on its behalf.

2. The basic application(s) as defined by Section 141 of the Act were/made in the following country or countries on the following date(s) by the following applicant(s) namely:

   in (i) Germany on (j) 28th June, 1977.

   by (k) NICO-Pyrotechnik, HANNS-JURGEN DIEDERICHS KG.

3. (l) WILLI LEBERS and UWE KRONE...

   of(n) Kellerberg, ... 2077 Trittau, Germany, and 2071 Hamfelds...

   ... Krs. Stormann, Germany, respectively.

4. (p) The basic application(s) referred to in paragraph 2 of this Declaration were/made in a Convention country in respect of the invention the subject of the application.

Declared at Trittau this 19th day of June 1978

NICO-PYROTECHNIK

Hanns-Jürgen Diederichs KG
Claim 1 Process for the production of a dense cloud consisting of finely dispersed solid particles, which are deployed, for instance, from a container by means of compressed gas characterized by the application for military purposes in such a way that micro-fine powder with a diameter of 3 to 60 μm and an opaqueness for visible light and infrared light to a wavelength of 14 μm and a sinking speed of up to 5 cm/sec is used.
COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE:

Class

37489/78

Int. Class

Application Number. Complete Specification Lodged:

Lodged:

Accepted:

Published:

Priority:

Related Art:

Name of Applicant(s): NICO-PYROTECHNIK HANNS-JURGEN DIEDERICHSG KG.

Address of Applicant(s): Bei der Feuerwerkerei 4

2077 Trittau

Germany

Actual Inventor(s): Willi Lubbers,

Uwe Krone

Address for Service: CLEMENT HACK & CO.,

140 William Street,

Melbourne, Victoria, 3000

Australia

Complete Specification for the invention entitled:

"PROCESS FOR THE PRODUCTION OF DENSE
CLOUDS FOR CAMOUFLAGE"

The following statement is a full description of this invention, including the best method of performing it known to me/us.
The invention relates to a process for the production and fast deployment of clouds for camouflage.

It is known to establish in front of armoured vehicles a smoke wall, which protects them from field observation, by firing smoke projectiles from launchers mounted on the armoured turret.

The pyrotechnical compositions used in the smoke projectiles develop a smoke based on phosphorus, phosphorus containing compositions or HC smoke compositions, the produced smoke consists of finely dispersed acid droplets or hygroscopic salts respectively, such as zinc chloride (DT-PS 1 185 510, DT-PS 1 196 548 and DT-PS 1 300 454). It is also known to produce smoke clouds by developing strongly hygroscopic acids, such as chloro-sulfonic acid or acid chlorides, such as phosphorus pentachloride or liquids, such as titanium tetrachloride or mixtures of the heretofore mentioned acids, acid chlorides or liquids in connection with amines, such as, for instance, triethanol amine in DT-OS 2 232 763.
It is also known to produce smoke clouds with fine droplets by the dispersion of oil or oil-water emulsions by means of pressure gas generators.

While pyrotechnical smoke is generally related to fire danger, danger of poisoning by the mostly toxic smokes and to an only slight scattering and absorption in the near infrared region, the two-component smokes produced with acids, acid chloride, liquid in combination with amines have only a slight scattering and absorption in the near infrared region and above all, the drawback of acute etching, corrosion and toxicity. The oil or oil-water emulsion smokes are completely transparent for the near infrared light (0.8 to 14 μm).

Besides it is known from GB-PS 638 060 to produce in the form of smoke a stream of solid particles for coating and laquering purposes.

The invention has the object to produce dense clouds which can be deployed quickly, are cold, neutral and non-toxic, as well as cannot be penetrated by the rays of an infrared instrument or other thermal-picture instruments of the military noctovisir technology.

In accordance with the invention the object of the invention is attained for military purposes in that a micro-fine powder with a diameter of 3 to 60 μm and impermeable for visible light and infrared light up to a wave length of 14 μm and having a sinking speed of up to 5 cm/sec is used, which said powder is finely dispersed by means of a driving gas or an explosive or in the shortest time from a container.
As powder, in accordance with the invention, talcum, kaolin, ammonium sulfate, ammonium phosphates, calcium carbonates, magnesium carbonates, sodium bicarbonate and other powders, which fluidize easily or can be made to fluidize, are used, which said powders can form floating clouds by atomization.

By the use of the heretofore mentioned neutral, cold and non-toxic powders, the disadvantage of toxicity and fire danger are eliminated, since the powder is atomized cold. However, the significant advantage is that the military noctovisor technology, especially the application of thermal picture instruments is not able to penetrate the artificial smoke cloud and to draw a thermal picture of the terrain lying behind the cloud.

Atomization of the powder can take place according to the known practice by means of driving gas, for instance CO₂, N₂ or compressed air, within or without the container holding the powder. As driving gas also frigen or drive gas from gas generators can be used. The triggering or release respectively of the compressed gas onto the powder in the container is carried out preferably electrically, for instance by activating a pyrotechnical power element or an electro-mechanical element.

The expulsion of the powder occurs inside the powder container through a stand-pipe which ends in an appropriate nozzle opening for fine dispersion in the surrounding air. Here, as is technically customary, a separation can be considered between the release of the
compressed gas onto the powder and the outflowing of the powder through the nozzle, for instance by an additional valve and/or a rupture disc. In this way a quick and safe deployment of the smoke cloud is made possible.
The Claims defining the invention are as follows:

1. Process for the production of a dense cloud consisting of finely dispersed solid particles, which are deployed, for instance, from a container by means of compressed gas characterized by the application for military purposes in such a way that micro-fine powder with a diameter to 60 μm and an opaqueness for visible light and infrared light to a wave length of 14 μm and a sinking speed of up to 5 cm/sec is used.

2. Process in accordance with Claim 1 characterized in that as powder talcum, kaolin, calcium carbonates, magnesium carbonates, sodium bicarbonates or powders which are easily flowable or are made flowable are used, which form by atomization floating clouds.

DATED THIS 26TH DAY OF JUNE, 1978

NICO-PYROTECHNIK HANNS-JURGEN DIEDERICH KS.
By Its Patent Attorneys

CLEMENT HACK & CO.
Fellows Institute of Patent Attorneys of Australia