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(54) **METHOD OF AND SYSTEM FOR
DESTABILIZATION AND DESTRUCTION OF
DANGEROUS ATMOSPHERIC PHENOMENA
MAINLY TORNADO.**

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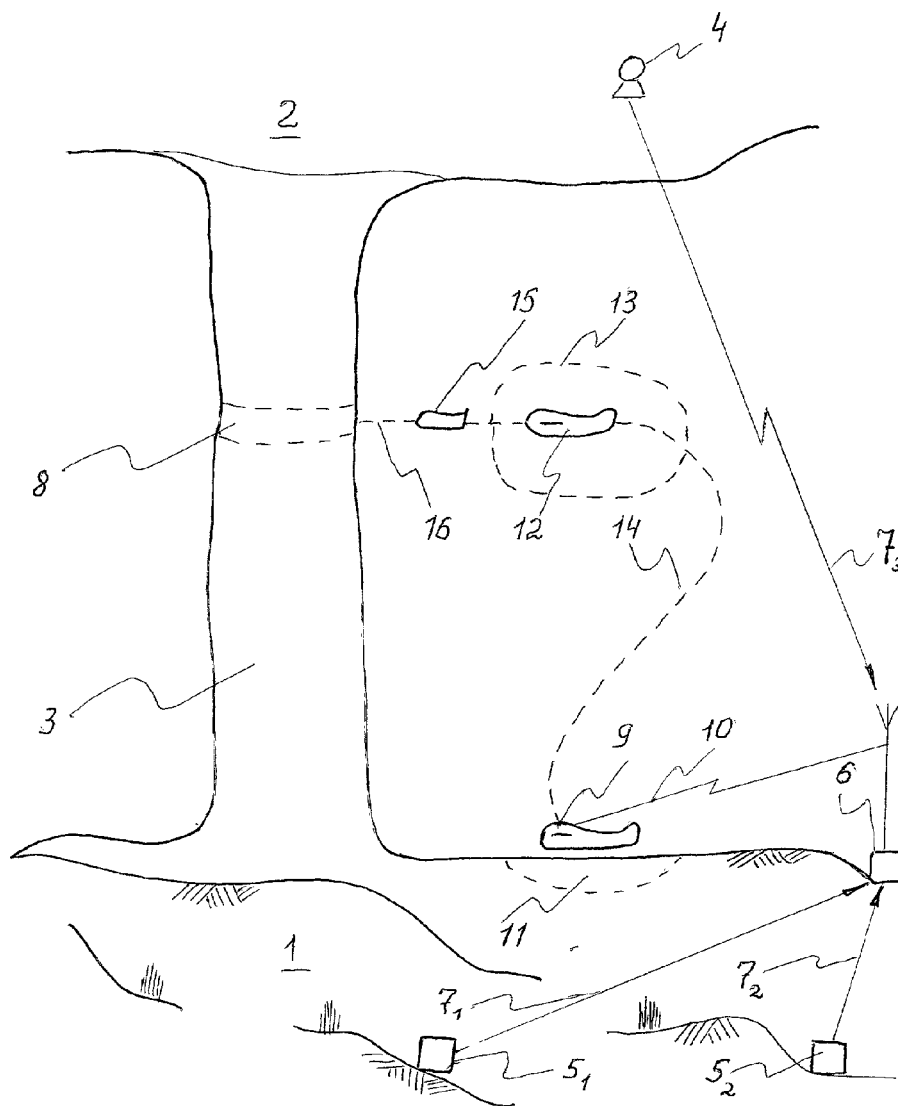
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(57) **ABSTRACT**

Method of destabilization and destruction of the dangerous atmospheric phenomena related to a rapidly rotating air masses mainly tornado and apparatus for its realization; this method consists in the delivery of normally liquid fuel-air explosive in the preferably chosen areas of this phenomena by pilotless fuel delivery means; the fuel is released, dispersed and mixed up with rotating air masses and through predetermined time this aerosol cloud blown up, strong shock wave scatters air masses, destroys a uniform rotating flow of air and thus destroys tornado.

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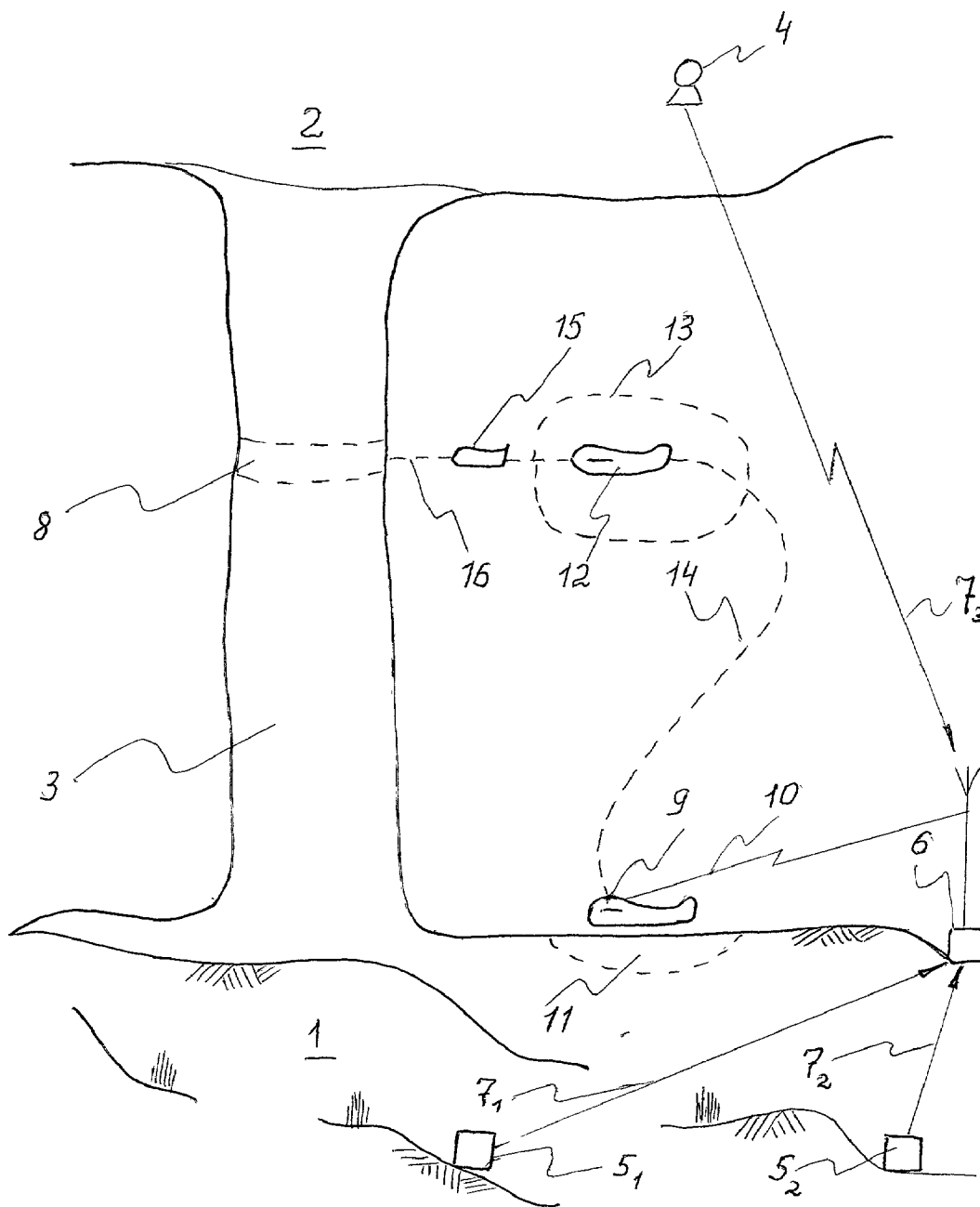


Fig. 1

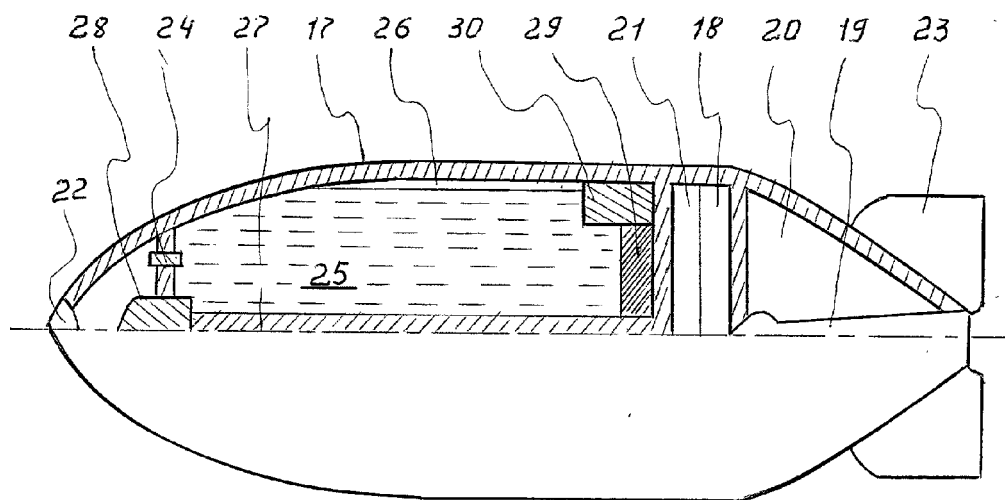


Fig. 2

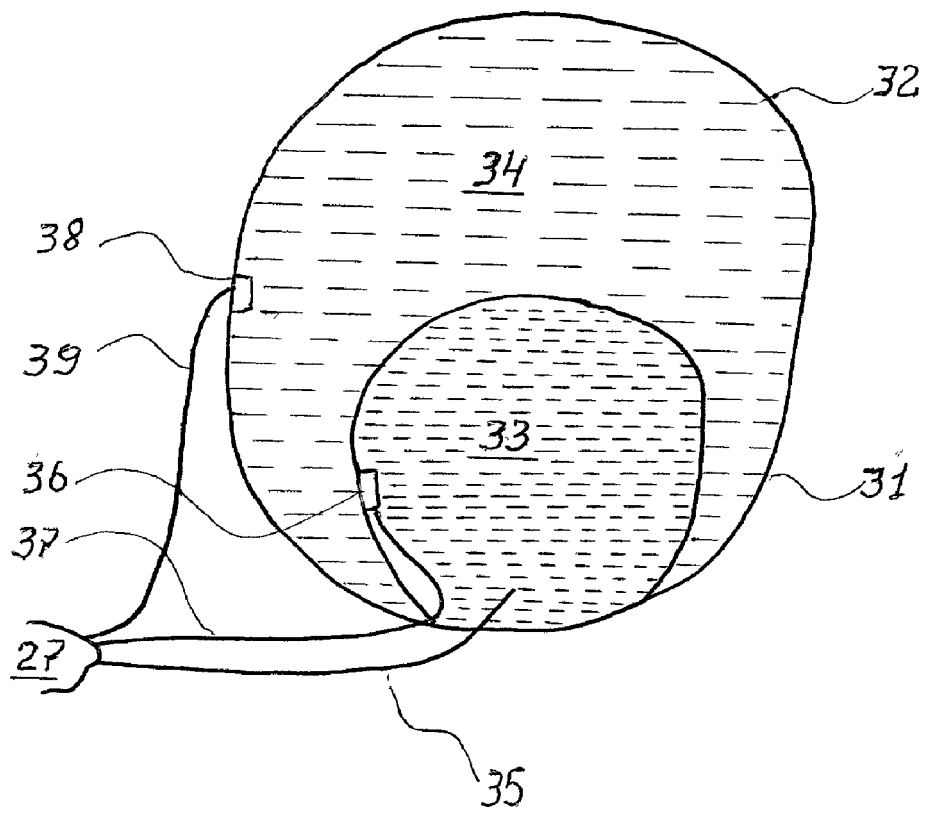
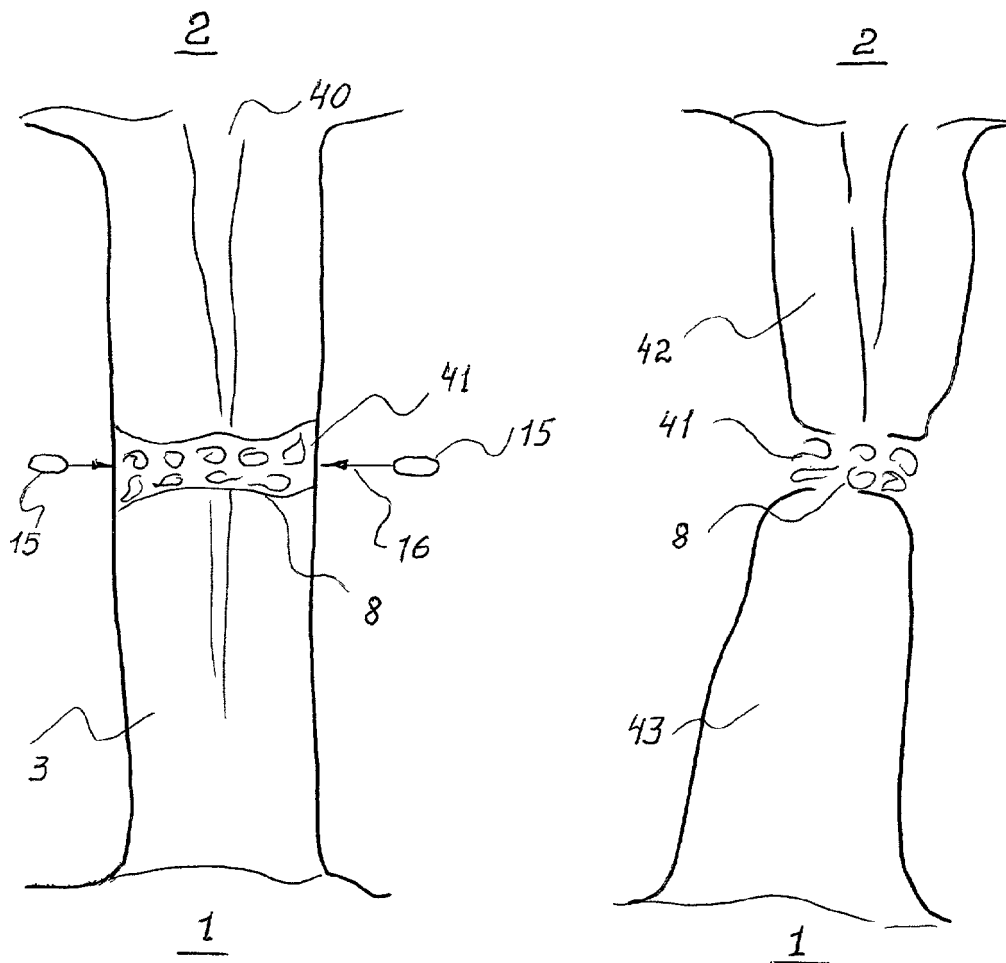


Fig. 3



Step 1

Step 2

Fig. 4

**METHOD OF AND SYSTEM FOR
DESTABILIZATION AND DESTRUCTION OF
DANGEROUS ATMOSPHERIC PHENOMENA
MAINLY TORNADO.**

FIELD OF THE INVENTION

[0001] This present invention relates to the area of protection from vitally dangerous atmospheric phenomena caused by rapidly rotating air mass (vortex tube) such as tornadoes, contributing to these phenomena destabilization and destruction.

BACKGROUND OF THE INVENTION

[0002] Tornado is a vertical whirlwind of rotating air weights (vortex tube) which travels at a linear velocity from 15-35 m/sec range. The tornado top end is an integral part of the "parental cloud" and the tornado bottom end usually moves near the ground. The rotating velocity is in the range of 60-120 m/sec. There is an area of the lowered pressure (so-called of "eye") at the centre of this vortex tube. The diameter of the "eye" is about 0.1-0.3 of the tornado visible diameter. The deficiency of pressure inside "eye" is equal approximately to 0.01-0.1 atm [8].

[0003] The extensive area of the lowered pressure existing in a parental cloud supports the tornado rotation. The tornado energy having the $R=200$ m tube diameter, the $r=60$ m eye diameter, and pressure deficiency $\Delta=0.1$ atm is equal roughly $\Delta P \cdot 3,14 \cdot r^2 \cdot H \sim 30$ GJ, or to 3 GJ for each 100 m. of its height. Total tornado height can be from 500 m. to 2000 m. The total tornado energy is estimated as 20-150 GJ and the total energy of parental cloud is in range of 200-1000 GJ and even more [7].

[0004] It is known that the process of tornado formation usually passes through intermediate stages. At first the top "trunk" is formed then another "trunk" rises from below. Finally they are united and form a vertical uniform whirlwind. Tornado is less steady to external influence in the stage of formation. However, after tornado destruction the risk of new tornado "birth" is run.

[0005] There are many scientific works and inventions and works discussing these problems. Three directions may be identified in this plurality:

[0006] 1) Creation of tornado-resistant house structures. It is a passive protection method, an example is given in [1].

[0007] 2) Development of methods of and equipment for tornado destruction which is based by application of external energy sources.

[0008] 3) Development of methods using chemical materials brought to the cyclone "eye" thus initiating self destructive catalyzing effect [2].

[0009] My offer falls in the second category.

[0010] Three external sources of energy to fight with the abnormal atmospheric phenomena are offered. These sources are: sun energy, jet engine energy and explosion energy.

[0011] Numerous research works have been constructed and they show that tornado does not arise suddenly [3]. Their automatic recording devices convincingly prove the occur-

rence of tornadoes for 5-10 minutes. With reference to tornado of 1999 in Oklahoma-City it was revealed that the radar discovered the nearing tornado two hours prior to its occurrence. Hence, a high degree of timely tornado detection possibility exists.

[0012] It is discussed in the patent [4] how to destroy tornado using solar energy. Energy should be concentrated on a vortex tube using a system of mirrors located in space. The system is very far from practical realization. It still needs research and designing of the sophisticated control system, facilities solar energy focusing on driven vortex tube. Large money expenses for research, design and manufacturing are involved.

[0013] Dr. B. Eastlund [5] offered to use the Solar Power Satellites and preliminary transformation of solar energy to VHF energy utilized for heating air masses in vortex tube. The author [5] estimated the tornado power as 70 GW roughly approximately.

[0014] In [6] author offered to use old jet engines firmly installed in pre-designated positions for this purpose. However, to reach the tangible influence on tornado moving with speed close to 30 kms/hours and having a diameter of 50-300 meters, it is necessary to have installations with a many jet engines (some tens) and to move them with same speed.

[0015] It is extremely difficult for practical implementation. Attempts to blow up tornado using artillery cannons were made but to no avail. "The belief that firing a cannonball or other projectile into a spout can "break it up" has no scientific foundation [7]".

[0016] The explosion method is investigated by C. C. Chang [8] who conducted a set of experiments. His offer is based on a known hypothesis concerning natural tornado destruction processes. If two parts of vortex tube are separated one from another somewhere in the middle by an irrotational layer the parental cloud will tow the top part vortex tube much faster (20-45 m/sec) and lower part will be slowed down caused by the terrestrial surface friction. Horizontal distance between parts will be increased in due course and tornado will be destroyed before causing damages.

[0017] C. C. Chang has managed to destroy a little vortex tube in laboratory conditions exploding the balloon filled which a mixture of H_2 and O_2 gases in a volumetric ratio of 2:1. The explosion of such mix is a detonation. Its duration is very short and this phenomenon complicates transfer of explosion energy to a rotating aerial flow.

[0018] However, the method given in [8] does not allow to transfer the energy of explosion to a rotating aerial flow effectively. This balloon was placed in the middle of the tornado vortex.

[0019] Use of hydrogen having low value of combustion heat (2570 kcal/m³) and the delivery of reasonable quantity of this gas (hydrogen and oxygen) will require heavy equipment and time. It is rather difficult and expensive. Use of liquid hydrogen is impossible practically because hydrogen has a low temperature of boiling (-250° C).

[0020] The idea of C. C. Chang is to deliver such gas balloons using anti-aircraft guns. It is difficult to realize because the very large quantities of necessary gas are to be

delivered. Additional difficulty is inability to ensure accuracy which the author considers necessary (~15 m).

[0021] It is offered also to scatter explosive charges on a tornado transits. These charges can be lifted by the suction effect taking place on tornado arrival in the central channel of the tornado and be blown up at some height [9, 11].

[0022] Except of [8-11] another offer was to bring an explosive charge into the central area of a tornado, where the speed of air mass rotation and therefore the tornado energy (kinetic energy) is virtually zero. The size of this area essentially exceeds the size of a cloud of explosion, i.e. an area of explosion influence, and the time when this explosion cloud exists must be large enough. Thus, the effect of these methods is negligible.

[0023] C. C. Chang laboratory experiments delivered positive results because his balloons sizes were close to the sizes of an artificial laboratory tornado. But practical implementation is actually impossible.

[0024] We may conclude that no practical real way exists to fight such dangerous natural phenomena, as a tornado.

[0025] The purpose of the present invention is the effective destabilization and destruction of the dangerous atmospheric phenomenon, first of all, tornado. The proposed method does not require enormous expenses and allows to transfer energy of explosion to rotating air masses effectively.

SUMMARY OF THE INVENTION

[0026] The indicated purpose is reached using an offer method of dangerous atmospheric phenomena destabilization and destruction, mainly tornadoes. Movement of fast rotating aerial masses characterizes these phenomena. The mentioned method includes an environment monitoring, this information concentration, the information transmission to a analyzing station, the analysis of this information, the discovery of a new born said phenomena, the calculation of its trajectory, shape, characteristics and at least horizontal layer height and at least one local area (attack area), the most suitable for the tornado destruction and located high enough to avoid explosion influence on ground buildings. Such system may be built similar to the system described in [3].

[0027] Resolution threshold decrease in the similar system or by other words allowing a definite number of "false alerts" provides tens of minutes to fight tornado and it is enough for the timely intervention the real speeds of the mentioned means.

[0028] The layer thickness is chosen corresponding approximately to the explosion's cloud dimensions (30-100 m).

[0029] Use of the normally non-explosive liquid oxygen-poor fuel-air explosive (FAE), which at evaporation or dispersion mixes with air and at a definite concentration forms an explosive mixture (aerosol cloud) having high heat combustion and allows to create a powerful shock wave of widening at explosion. Use of this FAE, which is liquid under conditions close to NTP, allows to reduce the requirements to thickness of housing walls.

[0030] Use of the solid fine dispersed additions allows to increase fuel energy.

[0031] The indicated purpose is also reached by the liquid said fuel delivery directly to the area of organized motion of air masses, for example, the rotating aerial masses area of chosen layer and/or to updraft area in hollow core (attack object), that is the kinetic energy concentration area.

[0032] Such deliver is implemented accordingly to the analyzing station signal.

[0033] The FAE is used for filling bombs and were repeatedly applied ("Hellhound", BLU-95, BLU-96, BLU-72-USA) and ("vacuum bombs" -ODAB-1000, ODAB-1500-Russia) [13]. There are described in 2000 Russian 1500 kg ODAB delivered by military plane Su24.

[0034] Ethylene oxide (ETO), propylene oxide, their mix(1:1) and lot of other chemical combinations are used as FAE. FAE is liquid under normal conditions or close to normal, This allows to transfer large quantities of FAE (100-1500 kg) inside a bomb or a container [14]. At opening the container the fuel is released. Vaporized FAE (or its drops) mixes up with rapidly rotating air masses, forming an extending aerosol cloud and in (within) the certain time (0.1-5 sec) the fuel concentration reaches limit of explosion (5%-17.5% for a mix 1:1 ETO and propylene oxide). Outside of these limits burning occurs.

[0035] Let's accept that a PLFDM filled with $P=1200$ kg. of FAE There are used usually fuel having high "heat of combustion" and being liquid by a conditions which are close near normal conditions (NTP). Ethylene oxide have density— $d=1.26$ kg/m³, heat of combustion $t=14000$ kcal/kg. Hence, FAE-filled bomb energy:

$$E_{\text{b}} = t * P = 14000 \text{ kcal/kg} * 1200 \text{ kg} = 70 \text{ GJ} >> 3 \text{ GJ}$$

[0036] The bomb energy exceeds energy of a layer, even by efficiency, which is equal 10%.

[0037] The delay time which is necessary for aerosol cloud formation is determined by diffusion speed. For usually used mixtures the time for container opening up to achieve the allowable concentration is equal approximately ~0.1-5 sec.

[0038] The expanding aerosol cloud will have the wrong gaunt form, but for simplicity of calculations we shall accept spherical. Then an aerosol cloud diameter for explosion concentration (we shall accept 5%) will be equal approximately up to 30 meters. And volume of this cloud is less 100 times than volume of a 50-meter tornado layer.

[0039] Thus the explosion energy connected to action of a shock wave is transferred to air masses which are exceed fuel masses in 10-20 times. The shock wave has energy comparable to energy of layer (by a rotating flow energy) and the delivery of several containers filled with fuel which allows essentially surpasses this energy and even energy of tornado.

[0040] Flying apparatus without pilot (Pilotless fuel delivery means-PLFDM) is used for said fuel delivery. A tornado travels at a velocity in the 15-30 m/sec (50-100 km/h) range. The velocity of the jet aircraft and rocket arrives up to 2M=660 m/sec (2200 km/h). The velocity of pilotless aircraft goes up to ~100-200 m/sec and more (for rocket).

[0041] The average way of pilotless aircraft inside tornado is 0.5 D. Then PLFDM can be within the limits of a pipe at movement against air mass several seconds and more. The

brake system can essentially increase this time. This fuel is filled a storage housing located in PLFDM. Such apparatus may be ground-based and airborne missiles, pilotless aircrafts (airplanes with jet or piston engine and helicopters). Information concerning tornado trajectory, its shape and characteristics are transmitted to the delivery means for the proper course calculation.

[0042] The indicated purpose is also reached by opening of the envelope of the storage fuel housings located in PLFDM and its frame when they hit attack area. The explosion of low brizance charge ("first opening" charge) bursts the housing walls and bursts FPLDM body.

[0043] At this time the liquid fuel, which filled the storage housing, is released and can widen and mix freely with the oxygen of the aerial flow in the attack area. The newly created aerosol cloud can be exploded after reaching the concentration capable to destruct a rotating aerial flow.

[0044] High brizance detonator performs the aerosol cloud explosion some times after fuel release, which is found on the analyzer of the fuel concentration in air and is determined the detaining element, for example, by timer, which included in structure of the explosion initiator, in accordance with preliminary calculations.

[0045] The aerosol cloud explosion is made in necessary time after releasing fuel, which is defined on the fuel (in air) concentration analyzer or by a timer according to account. Time necessary to form a cloud of the required concentration is in the range of 0.1-5 sec.

[0046] The indicated purpose is also reached by using more economical two-stage delivery method of said fuel. At first, these PLFDM filled with fuel have to be lifted up and brought to vicinity of the layer, chosen for attack. Lifting is carried out by aircraft-carriers or missile-carriers and then cluster of said PLFDM are directly immediately to the said attack area.

[0047] Upon achievement of said layer height PLFDM-carriers has to be launched to said attack area.

[0048] The indicated purpose is also reached by attacking the chosen layer from various directions, delivering said fuel in order to make up a layer of chaotically moving non-rotating aerial masses, which tears off the energetic flow to the tornado lower part and this contributes to its break.

[0049] The indicated purpose is also reached by multiple said fuel delivery to local attack area by said method. Sufficiently powerful energy flow is created and this flow allows to form a window of chaotically moving aerial masses in the tornado wall. These aerial masses will be sucked in by tornado resulting in the sharp decrease of pressure difference in the tornado tube and in the sharp decrease of the low part steadiness.

[0050] Simultaneous fuel delivery to area of the lowered pressure (area of "eye") and aerosol cloud explosion allows to intensify influence on tornado.

[0051] The indicated purpose is also reached by the attack of two adjacent layers at first and subsequently the attack of the intermediate, whose thickness has roughly the same value as two said layers. The intermediate layer is attacked after predetermined time stipulated by the replacement when an expansion wave is changed to a compression wave.

[0052] The indicated purpose is reached by the special system using. Said system implements the described above method of destabilization and annihilation of dangerous atmospheric phenomena caused by fast rotating aerial masses movement, mainly tornado. Said system consists of observation stations monitoring environment situation and linked by information channels to the analyzing station to indicate the emergence of dangerous atmospheric phenomenon, its trajectory and its shape.

[0053] Said system contains also of the set FAE quantity and, at least, one of said fuel delivery means, including, at least, one pilotless fuel delivery means, analysis station is linked by the information channel to the delivery means.

[0054] Said system includes also a device to launch the pilotless fuel delivery mean's engine. This device is located on a starting position (on airport when the ground-based means is launched or on a flying apparatus when launching, for example, from a helicopter).

[0055] The indicated purpose is also reached by the system containing the fuel delivery means such as: PLFDM (for example, missiles, helicopters, aircrafts without pilots etc.) and group means: aircraft(helicopter)-carries. Carrying capacity of MI-28 (Russia) helicopter on external hanger is equal to 20 tons, it corresponds to 12 fuel-air explosive filled pilotless rockets (each by 1200 kg of said fuel) or equivalent to 840 GJ.

[0056] Indicated purpose is achieved by that PLFDM consisting of body, rudder system, located in this body, engine (jet-engine or piston engine with external located propeller), movement controlling device (autopilot, automatic placing means or radio beam or laser means), accumulating housing filled by said fuel, low brizance explosive charge for housing's opening located in this housing and this explosion initiator. This initiator can be made as a sensor initiating explosion at corresponding change of the environment parameters (pressure, electrification, light background, image, turbulence etc.) fixing a moment when the attack is reached or as an external sensor controlled by the electromagnetic signal or a timer switching on PLFDM at preliminary set time.

[0057] Initiator can be made as a Backfired fuse, timer, concentration sensor, and constructional members. Initiator is usually connected to the detonator through an intermediate high explosive charge, for example, tetril.

[0058] In some tornadoes and especially near a storm cloud tornado's aerial masses are strongly electrified and this effect creates the dangerous possibility to inflame electrically and to burn down a part of mixture before its concentration reached the explosion limits.

[0059] In this particular case the indicated purpose is achieved by the construction, where easily expanding chambers, made as balloons with the thin elastic metalized expandable envelope or as metal container with side walls in the shape of silphone, are located inside the accumulating reservoir. At least, one chamber is filled by said FAE.

[0060] Such balloon has built-in own tearing envelope "opening" (second) charge and its initiator, which is launched by first opening charge explosion and includes a delay unit. After the reservoir is opened, the balloon's

envelope is expanded; the gaseous fuel density is decreased and approaches its value at the normal pressure.

[0061] Then second "opening" tears the balloon's envelopes, fuel mixes with air in a very short time and reaches the necessary concentration. Afterwards this aerosol cloud is blown by a detonator or by a natural way at the expense of the atmospheric discharge.

[0062] The indicated purpose is achieved also by the construction where second balloon, filled by oxygen-rich easily decomposing substance (for example at heating) is located inside PLFDM while chambers of first and second types have a common part of the envelope (for example one of them is located inside of another one), and substances qualities ratio in various balloons corresponds to the necessary concentration.

[0063] Balloon with said easily decomposing substance has its own decomposing initiator, for example, a heated element, where burning or exothermal reaction takes place while these processes are ignited by the opening (first) charge explosion. After both balloons are filled second opening charge operates. It is located on the common part of the envelopes of two chambers, which have a content of various types, for example on the internal balloon's envelope. A mixture of fuel and oxygen is formed at this time; a mixture has a necessary proportion.

[0064] The mixture is released by third charge explosion, which opens the chambers external envelope. A detonator or an atmospheric discharge blows up the mixture immediately.

[0065] Second and third initiators also have delay units. The delay time is chosen in such way that at first to realized both balloons envelopes, then the internal one was opened and mixing takes place and then it is blown up by a detonator immediately or at first the external balloon's envelope was opened and only afterwards a detonating explosion took place.

BRIEF DESCRIPTION OF THE DRAWINGS

[0066] FIG. 1 shows the generalized scheme of destabilization and destruction of the dangerous atmospheric phenomena (tornado) system,

[0067] FIG. 2. shows the central longitudinal cross sectional view through a pilotless fuel delivery means (rocket),

[0068] FIG. 3. shown the central cross sectional view through a balloon system which are located in the storage chamber of the pilotless fuel delivery means,

[0069] FIG. 4. shows the vertical cross sections of said tornado by execution of the destabilization attacks.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT.

[0070] 1/ Method

[0071] The two-stage option is the simplest and most effective way of the dangerous atmospheric phenomena destabilization and annihilation including tornado. A set of preliminary subsequent actions has to be carried out.

[0072] At first, an information concerning environment is collected and then analyzed to discover a dangerous phe-

nomenon creation, such as tornado, its movement trajectory calculation and choosing of the most suitable for destruction zone (attack object).

[0073] These data is transmitted to the fuel delivery means, for example, aircraft located at an airport or the air. Such aircraft has on board a set of several pilotless fuel delivery means (PLFDM). This pilotless means with jet engine is very similar to a missile. Each of them has a compartment filled with liquid oxygen-poor fuel-air explosive (FAE).

[0074] Then this aircraft flies to the attack object, located in the tornado vicinity on the chosen layer height, releases the necessary quantity on PLFDMs in the tornado direction. These PLFDMs deliver fuel-air explosive to the chosen layer (chosen attack area).

[0075] An explosion initiator, for example, a timer, is switched on simultaneously with each PLFDM start. After PLFDM reaches the chosen tornado layer, the timer initiates first explosion for fuel accumulating compartment and PLFDM frame opening. Also a delay element is actuated (e.g. a detonating cord if lighted), fuel and its drops is formed.

[0076] After a preliminary set time given by the delay element is past and after a cloud reaches the definite concentration range depending on the explosiveness limit, this delay element causes detonator's explosion causing in his turn explosive mixture cloud's explosion.

[0077] To strengthen influence on tornado and its destruction fuel is delivered to the chosen layer from various sides repeatedly.

[0078] 2/ System

[0079] A common summarizing picture of the system for dangerous atmospheric phenomena destabilization and annihilation based on the proposed method is given on FIG. 1. A vortex tornado tube is located between the earth's surface and a parental cloud. Environment monitoring station 5 is installed on satellites 4 and in different areas of the dangerous region. These stations are connected to the stations analyzing information and discovering dangerous phenomena and calculating their trajectories 6 through information channels 7.

[0080] Analysis results define layer chosen for attack 8. Stations 6 are connected with group means of fuel delivery 9 by the information channel 10. These means (aircraft carriers) are initially located on ground in the patrol areas (e.g. airports) or in air in air standing patrol.

[0081] The trajectory of the aircraft-carrier movement 14 from its initial position on an airport to its position 12 just before the attack 13. Being in this position the aircraft carrier releases PLFDM 15. Practically PLFDM with jet engine is a missile. This PLFDM moves on the trajectory 16 to the chosen layer area 8. The trajectory is between the initial position for attack of the pilotless aircraft 12 and its final position in the layer 8.

[0082] FIG. 2 shows the central longitudinal cross sectional view through a pilotless fuel delivery means with jet engine (missile). A jet engine 18 with nozzle 19 and housing for jet fuel storage 20, which used by the engine 18, are located inside the missile frame 17. A missile control sys-

tem, including autopilot etc., **21**, control sensor **22** and control wheels **23** are used for flight (connection units are not shown). Accumulating fuel-air explosive housing is also located inside the frame **17**. This housing has a plug **24** and is filled with fuel-air explosive **25** in such a way that an aerial cavity for fuel vapours exists. An explosive charge **27** for frame **17** and fuel accumulated housing opening is placed in this housing; the charge is connected with an initiating timer **28**. First delay unit **29** connected with detonators (not less than two) is also placed in housing.

[0083] FIG. 3 shows the central cross sectional view through a system of two balloons with are located in the accumulated housing of the pilotless fuel delivery means when first balloon **31** is located inside another one **32**. The internal balloon is filled by fuel-air explosive as shown on FIG. 3. A decomposition initiator (e.g. Bickford cord) **35** enters through envelop inside the balloon **33**. First end of this cord is immersed in the oxygen-rich substance **33** and second end is connected to first opening charge **27**. Second opening charge **36** is placed on the part of the envelope of the internal balloon **31** dividing two different mediums **33** and **34**. Second opening charge **36** is connected with second delay unit **37**, whose setting input is connected to the first opening charge **27**. Third opening charge **38** is connected with first opening charge **27** through third delay unit **39**.

[0084] FIG. 4 shows the vertical cross-section of tornado when the destabilization attack takes place. Designations on the figure are as follows: ground surface—**1**, parent's cloud—**2**, tornad—**3**, chosen attacked layer—**8**, PLFDM—**15** and trajectory—**14**, suction zone ("eye")—**40**, destabilization area—**41**.

[0085] Step 1 shows situation at the attack beginning and Step 2 shows situation of divergence of upper **42** and low **43** parts after multiple attacks from different sides.

[0086] 3/ System Functions in the Following Way

[0087] Initial stage—Step 1.

[0088] Fuel and pilotless fuel delivery means are stored at the airport **11**. Accumulating compartments are filled by fuel-air explosive and then are located on the airplanes-carriers. Airplane-carriers on the duty **9** have necessary load being on airport **11**. Information analysis stations **6** are connected by in informational communication lines **10** with the airplane (helicopter)-carriers and pilotless means on duty **9**. Environment monitoring stations **5** collect information and transmit it through informational communication lines **7** to the information analysis station **6** to discover a dangerous phenomenon. At the same time the trajectory and the location of a layer chosen for attack are calculated.

[0089] Then the aircraft carriers fly up and moving on the trajectory **14** occupy position **12** in the attack area **13** in the vicinity of the chosen for attack, tornado layer **8**. The aircraft-carriers releases PLFDM(**15**) with fuel from the attack position in the direction of the chosen layer on trajectory **16**. An initiator-timer **28** is switched on at launch.

[0090] After the set time period the PLFDM reaches an area of fast rotating aerial masses **41**. The timer initiates an explosion of the first opening charge **27** at this moment. This explosion results in accumulating housing and PLFDM's body destruction.

[0091] Simultaneously an opening charge explosion causes switching on the first delay unit **29**. Fuel is released and dispersed in air, it mixed with rotating aerial masses forming an aerosol cloud, fuel concentration drops and after suitable time period unit **29** causes detonators **30** explosion. Detonators **30** explosion causes aerosol cloud explosion and rotating aerial flow destabilizing effect.

[0092] Step 2.

[0093] A layer **8** is gradually destabilized if attack power is sufficient. A non-rotating layer is formed in tornado middle part. It disturbs energy pumping to tornado low part **43** and it starts to fall behind upper part **42**. It results in gradual tornado destruction.

[0094] The Advantages of the Offered Method and System are as Follows:

[0095] 1. The offered decision allows to deliver and to concentrate a necessary quantity of energy in necessary places of a vortex tube,

[0096] 2. The offered decision allows to transfer a significant quantity of energy to rotating aerial masses of tornado, this quantity is comparable to or superior of their own rotation energy and is big enough to destabilize this rotation, breaking conditions of tornado stability, thus causing tornado destruction.

[0097] 3. The offered variants of attack strategy allow to influence on the specified atmospheric phenomena more effectively.

[0098] 4. The offered decision allows destroying new tornado existing in region at this time.

[0099] 5. The practical realization does not require enormous financial resources.

[0100] 6. The existing engineering development is sufficient for the first experiments.

[0101] Only small alterations are necessary in existing bombs (for example, replacement of "the probe" by the timer etc.).

I claim:

1. A method of destabilization and destruction of dangerous atmospheric phenomena caused by rapidly rotating aerial masses movement, mainly tornado, including the following steps:

an environment monitoring,

a monitoring information analysis and a recognition of new born said phenomenon,

a calculation of its trajectory, shape, characteristics and, at least, horizontal layer height and, at least, one local area (attack area), the most suitable for destabilization and destruction of said phenomenon and located on such height above ground to avoid any influence on ground buildings,

a preparation of necessary quantity of liquid normally non-explosive oxygen-poor fuel-air explosive (FAE),

a preparation of, at least, one fuel delivery means in waiting zone,

filling of, at least, one storage housing of said fuel delivery means with said fuel,

sending of the trajectory data to, at least, one said fuel delivery means,

a delivery of said fuel by, at least, one fuel delivery means to said attack area,

opening said storage housing, dispersing fuel-air explosive for its propagation in an ambient air media of said area and mixing with atmospheric oxygen (aerosol cloud creation),

explosion of said aerosol cloud at reaching of the predetermined fuel concentration in a range of concentration, at which the explosion is possible.

2. The method according to claim 1, wherein said fuel delivery is performed directly to area of air stream concentration, for example, rapidly rotating air masses' area.

3. The method according to claim 1, wherein said fuel delivery is performed in two stages:

a preliminary delivery of, at least, one pilotless fuel delivery means filled with said fuel to calculated point in the vicinity of said layer, using, for example, aircraft as pilotless fuel delivery means-carriers,

flying of said pilotless means from calculated point to the chosen attack area.

4. The method according to claim 1, wherein the repeated delivery of said fuel to the chosen attack area of said layer is carried out.

5. The method according to claim 1, wherein the repeated delivery of said fuel to the chosen layer is carried out from the different directions.

6. The method according to claim 1, wherein the delivery of said fuel is performed simultaneously to chosen attack areas of two chosen layers, located at different heights, for example, first area located in rotating air masses, another located in reduced pressure zone.

7. The method according to claim 1, wherein is carried out:

at first, delivery of said fuel to a few, at least, two said layers, located at different heights,

at second, additional delivery of said fuel after the second calculated delay time to the space between said layers.

8. A system for destabilization and destruction of the dangerous atmospheric phenomena caused by rapidly rotating aerial masses movement, mainly tornado, comprising:

at least, one environment monitoring station,

a specified quantity of liquid normally non-explosive oxygen-poor fuel-air explosive,

at least, one fuel delivery means, including, at least, one pilotless fuel delivery means, having at least one storage housing filled with said fuel-air explosive,

a station for performing of environment monitoring information analysis, recognition these phenomena, calculation of their trajectory and having communication channels with said monitoring stations and, at least, one said delivery means,

a device to launch the engine of fuel delivery means located on its starting position,

a station for the analysis of the information, detection of the dangerous phenomenon and definition of its trajec-

tory having communication channels with the said analysis stations and, at least, one fuel delivery means,

at least, one detonator for explosion of an aerosol cloud implemented as high brizance charge,

at least, one initiator of explosion of said detonator.

9. The system according to claim 8, comprising also an additional means for preliminary moving pilotless fuel delivery means, for example, aircrafts.

10. The system according to claim 8, wherein said pilotless fuel delivery means consists of, at least,

a body,

a rudder system and located in this body:

a engine chosen from group, including:

jet engine,

piston engine with external located propeller,

a device of movement control,

an accumulated housing, and, at least, one placed in this housing a low brizance explosive (first "opening") charge for opening the said housing and said body and release of the said fuel, and also,

at least, one initiator of said charge explosion.

11. The system according to claim 10, wherein said initiator of opening charge explosion is chosen from group of means including:

a timer, whose input at the initial moment is connected to the device to launch engine of said pilotless fuel delivery means engine,

an analyzer of a suitable parameter of external environment, whose sensor is located on the body of said pilotless fuel delivery means,

a sensor of an external control electromagnetic signal, whose source is located outside of tornado.

12. The system according to claim 8, comprising said, at least, one pilotless grenade(rocket), whose starting position is chosen from the group including:

pilotless fuel delivery means,

aircrafts,

ground starting position(positions).

13. The system according to claim 8, wherein said detonator and said initiator are located inside said pilotless fuel delivery means, the initiator contains the predetermined detaining element and the initiator's starting input is connected with a unit which is selected from:

opening charge(first),

device to launch the engine fuel delivery means.

14. The system according to claim 8, comprising:

external fuel concentration sensor, connected with the concentration analyzer; said detonator and initiator which are located inside the body of said pilotless fuel delivery means and the analyzer output is connected with the initiator starting input and said initiator connected with said detonator.

15. The system according to claim 8, comprising, at least, one said initiator of explosion's detonator which is chosen from the group including:

an analyzer of a environmental appropriate parameter, whose input is connected to a sensor control located on the body of said pilotless fuel delivery means,

an analyzer of the external control command electromagnetic signal,

a timer located in the body of said pilotless fuel delivery means, whose input is connected with the starting device of the said means' engine at the initial moment.

16. The system according to claim 12, wherein, at least, one detonator for the aerosol cloud explosion is located inside grenade (rocket), the initiator of its explosion is also located inside this grenade together with said detonator and said grenade starting position is located outside of the tornado.

17. The system according to claim 10, wherein said storage housing holds, at least, one container with a thin easily expanding envelope and this container is filled with said fuel.

18. The system according to claim 17, wherein said housing comprises:

at least, one container of second type with has a easily expanding envelope, this container is filled with an oxygen-rich easily decomposed compound and contains an initiator of decomposition of the said compound connected with said first opening charge.

19. The system according to claim 17 or **18**, wherein said containers are chosen from group including:

balloons with metallized envelopes,

metallic boxes with walls which are made in form of bellows.

20. The system according to claim 18, wherein envelopes(walls), at least, one from container types has:

a common site of both envelopes, dividing two internal cavity, inside one of which there is a said fuel, and inside another is oxygen-rich compound,

the second opening charge and the second connected to this charge detaining element, located on the said common site, and

the third (own) opening charge located on external safe envelope one of the said containers and the third detaining element connected with this charge, and

starting inputs of second and third detaining elements are connected with first opening charge,

a delay time of the second detaining element is less than a delay time of third detaining element, and

a delay time of the third detaining element is less than a delay time of the first detaining element.

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