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(73) Patent owner:
BÁBOVKA MILAN ing., Liberec, CZ;
MATĚJČEK JIŘÍ ing., Praha, CZ;

(72) Patent originator:
Bábovka Milan ing., Liberec, CZ;
Matějček Jiří ing., Praha, CZ;

(74) Representative:
Strnad Václav ing., Rychtářská 375/331,
Liberec 14, 46014;

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Parachute rescue system especially for ultralight aircraft, hang gliders and motor tricycles

scheme

(57) Annotation:
The system is activated by the rocket engine (3) which takes out of the plane the canopy (6) of the parachute (5), folded in the inner container (10) the volume of which corresponds to the volume in the form of the package of compressed folded canopy (6) of the parachute (5) wherein the inner container (10) is secured against premature opening by the thread lock until the full stretching of the supporting cords (30) of the parachute canopy (6) and the connecting strap (11) of the parachute (5). The inner container (10) is inserted together with the supporting cords (30) of the parachute (5) and the connecting strap (11) of the parachute (5) in the container (l) that is fitted with the removable cover (8). The rocket engine (3) housed in the rocket launcher (2) mounted on the container (1) is connected by the connecting rope (13) to the inner container (10). The connecting strap (11) is connected with its one end to the supporting cords (30) of the parachute (5) and anchored to the airframe by its other free end that is provided with the screw snap-ring (12). The trigger (17) of the rocket engine (3) is connected by the control cable (14) to the handle (18) located within the pilot's reach.

CZ 285318 B6

Parachute Rescue System Especially for Ultralight Aircrafts, Hang Gliders and Motor Tricycles

Technical Field

The invention deals with a parachute rescue system applicable mainly for ultralight aircrafts, double-seater hang gliders, motor tricycles, and also for gyrocopters and when using a parachute with a sufficiently large canopy area, it is also suitable for light aircrafts. The rescue parachute system is designed to save the life of the aircraft crew in a critical situation and at the same time to save the aircraft itself.

Present Technical State of the Art

A parachute rescue system for ultralight aircrafts is known which is activated by a rocket engine that brings the parachute to a safe distance from the aircraft for the possibility of opening it. The parachute is connected via parachute cords and a connecting strap to an ultralight aircraft. The parachute, including cords and strap, is stored in a container mounted on the aircraft or in the aircraft. The rocket engine is located in a rocket launcher, mounted on the container with the parachute. In the case of emergency the rocket engine is activated by the pilot of the aircraft.

Instead of the rocket engine some parachute rescue systems use blast fired projectiles, or weights that carry the rescue parachute off the plane. The disadvantage of such projectiles is their initial high velocity which, however, decreases very rapidly in a short period of time, while its thrust strength is decreasing at the same time. In such a case there is a risk that the parachute being pulled out may come in contact with the airframe, in particular, with its vertical tail plane, i.e. the higher forward speed of the aircraft is, the higher risk exists. The projectile moves along a ballistic trajectory and its angle of fire tilts rapidly to the intended horizontal plane. The disadvantage is also a large weight of the weight, which energetically burdens the entire rescue system and also when the projectile is fired, the large recoil occurs. For these reasons rocket engines are used to launch the parachute, which guarantee a constant thrust for a certain period of flight time.

In both cases, i.e. with the use of the rocket engine or the blast fired projectile to fire the rescue parachute, the parachute is folded in the container and it is gradually pulled out of the container by the rocket engine or the fired weight. The rescue parachute is connected to the rocket engine or projectile. During the time of pulling out the rescue parachute the parachute is exposed to a considerable air resistance as the length of the canopy of the flared parachute including the cords is 16 to 18 meters. Due to the resistance of the acting air the trajectory of the rocket engine becomes flat, tilting towards the horizontal plane, even if the rocket engine launch angle has been chosen upwards with a slight deviation in the direction against the movement of the rescued flying object, e.g. an ultralight aircraft. The inclination of the rocket engine's path to the horizontal line is greater, the higher the speed of the ultralight aircraft.

The use of the rocket engine with a pulled out gradually deployed parachute is not perfect. In more complex emergency cases when the aircraft rotates during its fall, the parachute may become entangled in the rotating aircraft.

As a rule, the parachute, including the cords and the connecting strap, is, in addition, stored in a long bag, inserted into the inner space of the storage container. The long bag is harmonically folded in the storage container. The parachute canopy, cords and connecting strap are gradually pulled out by the rocket engine from this storage container during the flight of the rocket engine connected to the top of the long bag, while the parachute canopy, still stored in the long bag, expands to several meters long blade during the rocket engine flight that presents a considerable resistance when carried away from the moving aircraft. The rocket engine must have sufficient energy to safely strip off of the long bag from the parachute canopy in the last phase of the rescue system's function.

In an alternative construction of the above-mentioned rescue system contained, for example, in DE OS No. 4208839, Int. C1.[5] B 64 D 25/00, in particular in FIG. 2 of this published document, only the parachute canopy is deposited in the packaging hose while the carrying rocket is connected to the packaging hose. Here the packaging hose is executed in the form of a narrow long bag as described in the previous paragraph, while the parachute canopy is pushed into this packaging hose in a shape very similar to a retracted umbrella, as shown in the given Fig. 2 of the published file in question. Due to the dimensions of the parachute canopy it is necessary to use a packaging hose with the length of 4.5 to 6.5 meters depending on the type load capacity of the parachute. The parachute cords, including the connecting strap, are located outside the packaging hose which is again folded in the storage container, including the parachute cords and the connecting strap. This solution contributed in part to shortening the length of the packaging hose, but did not eliminate its expansion into a several meters long blade with accompanying negative phenomena represented by drifting the parachute still packed by a stream of air until the packaging hose is stripped off from the parachute canopy by the carrying rocket. In this case the parachute canopy having the shape of retracted umbrella leaves the packing hose gradually, by which, in addition, delays its opening.

In addition, the manufacturers of packaging hoses provide their tips with an additional little parachute that is in any case intended to ensure reliable removing the packaging hose from the parachute canopy.

Essence of Invention

The solution according to the invention aims to eliminate the above-mentioned shortcomings of the rescue parachute system with the possibility to increase the limit of the flight weight of aircrafts and their speeds at which the rescue system will be used, including increasing their safety and reliability. The system can also be used for single-seater and double-seater hang gliders, motor tricycles, gyrocopters, etc.

The rescue parachute system is activated by firing a rocket engine which ensures the transport of the parachute to the required distance from the aircraft. The essence of the solution is that the inner container is secured against premature opening by the thread lock until the supporting cords of the parachute canopy and the connecting strap of the parachute are completely stretched, whereas the volume of the inner container corresponds to the volume of the compressed folded parachute canopy.

Based on the careful folding of the parachute canopy and its compression to the smallest possible volume, the inner container also has small dimensions. The term inner container is used in order to explain the general nature of the solution and when applying this solution in various conditions and variations of practice, the function of the inner container can be fully replaced by any package with a thread lock against opening the content of which will form the parachute canopy. The thread lock consists of a thread structure of defined strength.

The advantage of this solution is, above all, a safety launch of the parachute by the rocket engine in the specified or selected direction from the aircraft without the risk of contact of the parachute and its cords with the aircraft airframe. The canopy of the parachute is folded in the inner container which has the form of a compact package of the smallest possible dimensions. A significant advantage of the solution according to the invention is that after bringing the compact package with the parachute canopy to a safe distance from the aircraft by means of the rocket engine, the parachute canopy immediately falls out of the inner container and the canopy is subsequently opened. With this arrangement, during the flight of the compact parachute canopy its path is not affected by the air flow as it is the case with prior state of the arts systems using a packaging hose to insert the parachute canopy in a folded state into the form of retracted umbrella.

The optimal setting of the rocket engine's flight angle is in the direction above the aircraft, with a slight inclination against the direction of movement of the aircraft. When starting the rocket engine in this optimal direction, the safe height of the aircraft for its rescue, including the crew, is 30 meters above the ground. The average thrust of the rocket engine at the temperature of 20° C for carrying the parachute rescue system out of the aircraft is at least 600 to 700 N for 0.7 to 0.9 seconds depending on the size of the parachute canopy.

The canopy of the parachute gets into the appropriate, respectively the required distance from the aircraft still stored in the protective inner container in the form of a compact package of small dimensions, thus providing the minimal resistance when being carried out of the aircraft. There is no unwinding of the parachute canopy, and only after unwinding the cords and stretching them, including the connecting strap, there will be a sharp release of the canopy from the inner container and its opening. A premature opening of the parachute canopy, respectively its release from the inner container is secured by the thread lock the actual construction of which may be different. The simplest design of the lock is by means of a thread of a certain known and required strength. The time from the start of the rocket engine to the full opening of the parachute is 1.5 to 2.3 seconds.

From the energy point of view the most demanding case is when the rocket engine carries the rescue system vertically upwards. These limit conditions must be used to determine the required thrust of the rocket engine. The weight of the parachute rescue system, containing the parachute canopy, parachute cords, connecting strap, connecting rope, inner container canopy and rocket engine, is based on the weight of the secured aircraft in the range of 450 to 500 kg to about 11 kg. The weight of the entire parachute rescue system which contains, in addition to the complete parachute rescue system, also a container with the mounting bracket, launch pad or rocket launcher and launch handle with Bowden, respectively control cable then comes out to about 12.5 kg. The inner container is, like the rocket engine, hung on the little parachute opening the main parachute.

The container is equipped with a removable cover for the possibility of pulling out the inner container with the parachute canopy, parachute cords and the connecting strap with the rocket engine from the container. The removable cover is dropped at the same time as the rocket engine starts. The cover is made in the form of a lid in the case of external installation of the container that is when it is installed outside the airframe. In the case of internal installation of the container, e.g. in the aircraft fuselage, the removable cover is made in the form of a textile cover.

A removable cover ejector is also installed on the container, as well as the primary and secondary removable cover locks. Both locks of the removable cover watch the real need to remove it. For fixing the container on the aircraft airframe, respectively into the aircraft airframe it is provided with the mounting bracket in which the container is arranged adjustably, both in the horizontal and in the vertical direction.

Between the body of the container and the removable cover of the container there is lead the connecting strap terminated with the snap-ring and the connecting rope which is connected at its one end to the inner container and at the other end to the rocket engine. The connecting strap connects the parachute cords to the aircraft. The outlets of the connecting strap and the connecting rope are sealed, as well as the removable cover is sealed to the container body.

The rocket engine stored in the rocket launcher is protected by the cover and it is equipped with a transport lock. The rocket engine trigger is connected by the control cable with a handle which is installed within the reach of the pilot. The trigger of the rocket engine consists of a double striker installed at a pair of starting cartridges.

In an alternative container construction its removable cover is replaced by the whole container being divided in the direction of its longitudinal axis. Both halves of the container are provided with a seal which prevents the penetration of moisture into the inner space of the container. In the case of a divided container its longitudinal axis can be different or off-axis with the axis of symmetry of the rocket engine. When the rocket engine is started, one part of the container is automatically separated from the other part of the container, which allows the parachute to be taken out of the aircraft area in the event of emergency.

The parachute rescue system reliably performs its function when starting the rocket engine in any direction from the aircraft if the minimum required height of the aircraft above the terrain is available. The direction of the flight of the rocket engine of the parachute rescue system can also be identical with the direction of aircraft flight.

Survey of Figures in Drawings

The solution according to the invention is shown in the attached schematic drawings in which Fig. 1 shows a general view of the parachute rescue system, Fig. 2 a rescue parachute system in partial section, Fig. 3 a general view of the rocket engine, Fig. 4 a view of the rescue parachute system with the connecting strap, Fig. 5 is a side view of the aircraft with the parachute rescue system installed, Fig. 6 is a plan view of the aircraft of Fig. 5, Fig. 7 is a perspective view of the aircraft with indicated points for connecting the aircraft to the parachute connecting strap, and Fig. 8 is a front view of the aircraft suspended from the connecting strap of the parachute.

Examples of Invention Execution

The parachute rescue system, especially for ultralight aircrafts according to Fig. 1 consists of the container 1 provided with the mounting bracket 7 and the rocket launcher 2 which is covered at the front with the cover 28. The container 1 has the removable cover 8, connected via the seal 26 to the body of the container 1. The control handle 18 is connected by means of the control cable 14 to the trigger 17 of the rocket engine 3 (Fig. 2) housed in the rocket launcher 2 which is covered by the cover 4. The handle 18 is displaceable in the direction of the first arrow 23, the rocket engine 3 moves in the direction of the second arrow 24 after the ignition. The firing of the rocket engine 3 is secured on the one hand by the pull-out safety lock 29 and the handle 18, on the other hand by the transport lock 19 located by the rocket engine 3. The handle 18 for starting the rocket engine 3 is located in the cockpit. The trigger 17 forms a firing pin mechanism. By pulling the handle 18 the edge which allows the operation of the firing pin mechanism is pulled out. Pulling out the wedge simultaneously breaks the connection with the rocket engine 3. The firing pin mechanism is on the front part of the rocket engine 3, while on the rear part of the rocket engine 3 there is a suspension (not shown) for the connecting rope 13. The rocket engine 3 has a cylindrical shape (Fig. 3).

In the inner space of the container 1 the canopy 6 of the parachute 5 (Fig. 4) is stored, including the parachute supporting cords 30, the central cord 31 of the parachute 5 and the connecting strap 11, on which the snap-ring 12 is mounted. The container 1 is fitted with the removable cover 8 connected via the seal 26 to the body of the container 1. The connecting strap 11 of the parachute 5, as well as the connecting rope 13 are led out through the removable cover 8 via the seal 27. The connecting strap 11 is connected with its free end to the aircraft after the installation of the parachute rescue system into the aircraft. It connects the parachute 5 to the aircraft. The connecting strap 11 is dimensioned for the equipment that causes to open the parachute 5 at the given aircraft speed. The surface of the connecting strap 11 is protected against the effects of ultraviolet and infrared radiation. The connecting rope 13 connects the rocket engine 3 to the inner container 10 in which the canopy 6 of the parachute 5 is folded into the form of the compact package of the smallest possible volume. The connecting rope 13 is a flexible and strong cord protected by a non-flammable tube against burning by hot flue gases of the rocket engine 3.

The container 1 protects the inner container 10 with the compressed folded canopy 6 of the parachute 5, supporting cords 30 of the parachute 5, central cord 31 of the parachute 5 and connecting strap 11 from the sunlight, weathering, damage, etc. In the construction according to Fig. 2 the longitudinal axis 21 of the container 1 is parallel to the symmetry axis 22 of the rocket engine 3. The mounting bracket 7 of the container 1 allows for a different adjustment of the direction of the longitudinal axis 21 of the container 1 relative to the airframe. At the same time it is possible to adjust the setting of axis 22 of the rocket engine 3 symmetry relative to the container 1.

When the rocket engine 3 is started, both the primary lock 20 and the secondary lock 25 of the removable cover 8 are disabled, thereby actuating the ejector 9 which removes the removable cover 8. When the parachute rescue system is installed externally, the removable cover 8 is the form of, for example, a lid, and when installing the system internally, then, for example, in the form of textile cover.

The rocket engine 3 carries out of the aircraft the inner container 10 with the compressed folded canopy 6 of the parachute 5 and further the parachute cords 30, 31 including the connecting strap 11. The design of the complete rescue system is solved with regard to a high functional reliability, undemanding production and operation of the system, its small dimensions, low weight and reasonable price. In practice, the length of the inner container 10 is about 500 millimetres, which represents a form of compact package. The rescue mechanism of the system does not require special inspections, but the pre-flight actions.

In an alternative construction (not shown), the container 1 can be designed as a two-part, with the seal between the two parts. When the rocket engine 3 is put into operation, the upper half of the container 1 is separated, thus allowing the inner container 10 to be easily carried out by the cords outside the aircraft. In the case of the container 1 divided in this way the axis 22 of the rocket engine 1 symmetry can also be perpendicular to the longitudinal axis 21 of the container 1. If necessary, the axis 22 of the rocket engine 3 symmetry can be inclined at an appropriate angle to the longitudinal axis 21 of the container 1. The axis 22 of the rocket engine 3 symmetry is then either concurrent or non-parallel to the longitudinal axis 21 of the container 1. The container 1 can also be stored in the fuselage or outside the fuselage of the aircraft, even in a horizontal position, whereas at the launch of the rocket engine 3 it tips, respectively turns in the required direction due to the engine thrust.

The pulling-out rocket engine 3 according to Fig. 3 is formed by the tube 32 which is hermetically closed on both sides by screwed extensions. Inside the tube 32 the solid propellant 33 with the little channel 34 is inserted the burning time of which is precisely determined. The rocket engine 3 may have one or two nozzles 35 which are easily replaceable and they are closed with watertight membranes (not shown). Assembly and disassembly of the complete rocket engine 3 is easy and without the use of special tools. The rocket engine 3 is provided with a mechanical firing mechanism and its ignition is doubled, secured by a pair of starting cartridges 15 that are actuated by the double firing pin 16 attached to the starting cartridges 15.

The parachute 5 according to Fig. 4 is determined for rescuing aircraft, including the crew. It consists of the canopy 6, supporting cords 30, central cord 31 and the connecting strap 11. The canopy 6 should have the minimum area of 70 m^2, it is made of polyamide fabric and consists, for example, of 26 fields. The lower edge of the canopy 6 and the edge of the pole hole of the canopy 6 are reinforced with edgings. For example, 26 parachute supporting cords 30 having the length of about 9 meters are attached to the canopy 6. The central cord 31 connects the cords of the pole hole of the canopy 6 to the eye of the suspension rope. The connecting strap 11 connects the supporting cords 30 of the canopy 6 and the central cord 31 to the carried object. It is made of the polyamide strap and its length is about 6 meters. The connecting strap 11, including any anchor rope connected directly to the carried object, must be attached to the reinforcing part of the aircraft which transmits the strain at opening the canopy 6 of the parachute 5.

The aircraft is equipped with the hinge for fixing the parachute rescue system, i.e. near its centre of gravity, determined at the highest take-off weight of the aircraft. When the parachute 5 is opening, the aircraft structure is overloaded up to four times. For ultralight aircrafts it is recommended to mount the system in the centre of the aircraft behind the pilot seats, etc. (Fig. 5 and Fig.6), preferably inside the aircraft fuselage so that the rocket engine 3 firing from the container 1 is directed to the hemisphere, bounded by horizontal to vertical position outwards from the aircraft. The optimal direction of flight of the rocket engine 3 when the rescue system is used is indicated in Fig. 5 by the third arrow 36.

In the case of motor tricycles it is recommended to mount the rescue system in the rear part of the structure, either in the horizontal or vertical position, i.e. preferably again obliquely upwards with the deflection against the direction of the movement of the rescued object.

It is not recommended to place the rescue system in such a way that when the rocket engine 3 is started, some fixed part of the aircraft or its propeller is hit, or that the launch is directed downwards. Also, the rescue system cannot be positioned so that when the rocket engine 3 is fired, the crew may be endangered by the flame from the rocket engine 3 or the fuel installation or tanks of the aircraft, hang glider or motor tricycle could be hit.

It is recommended to interconnect the handle 18 of the control cable 14 with the switching-off of the aircraft engine so that in the case of the use of thruster propellers the parachute rescue system is not wound into the propeller.

Fig. 7 shows an exemplary location of anchor points 38 in an ultralight aircraft.

Fig. 8 again shows a similar arrangement according to Fig. 7 in which case two anchor points 38 arranged diagonally are used to anchor the ultralight aircraft. Into the screw snap-ring 12 of the connecting strap 11 the anchor rope 37 connected directly to the ultralight aircraft is threaded.

The activity of the aircraft crew in activating the parachute rescue system is simple and consists in pulling the handle 18 connected by the control cable 14 to the trigger 17 of the rocket engine 3, which fires two ignition launch cartridges 15 that ignite the powder charge that ignites the solid propellant mass 33 of the rocket engine 3. The rocket engine 3 sequentially unlocks the cover 28 of the rocket launcher 2, the secondary lock 25 of the removable cover 8, the primary lock 20 of the removable cover 8, and the ejector 9 removes the removable cover 8, after which the rocket engine 3 pulls the inner container 10 with the folded rescue canopy 6 of the parachute 5 from the container 1 out of the aircraft. At the same time the supporting cords 30 with the central cord 31 and the connecting strap 11 are gradually drawn out of the container 1.

After the parachute cords 30, 31 and the connecting strap 11 are stretched, the compressed folded canopy 6 of the parachute 5 is extracted from the inner container 10 by the thrust force of the rocket engine 3 after unlocking the thread lock, and the parachute immediately opens. The rocket engine 3 with the inner container 10 and the braking little parachute continues along the ballistic trajectory and descends to the ground on the braking little parachute. The main canopy 6 of the rescue parachute 5 is opened within the time from 1.5 to 2.3 seconds since the time of firing the rocket engine 3. The shot of the rocket engine 3 can be directed in any direction, but preferably perpendicular to the longitudinal axis of the aircraft in the direction upwards or slightly backwards, i.e. against the direction of the aircraft movement.

The designed and presented method of opening the rescue parachute 5 at an appropriate distance from the aircraft is more reliable and faster. The canopy 6 of the parachute 5 is immediately released from the inner container 10 having small dimensions corresponding to the form of a compact package. The danger of contact of the parachute cords 30, 31 and the canopy 6 with the aircraft is practically eliminated, even if the aircraft rotates during the fall. The canopy 6 of the parachute 5 reaches the safe distance from the aircraft in the compact closed inner container 10 in the form of a cylindrical package. The unpacking and opening of the canopy 6 of the parachute 5 occurs only at the safe distance from the aircraft.

When the rocket engine 3 is fired upwards and the speed of the aircraft is of about 80 km/h in the horizontal flight, it is possible to guarantee the rescue from the height of 30 meters above the highest point of the terrain. The rescue system can also be used as an effective means in the case of emergency landing in the terrain that does not have a suitable surface for landing the aircraft without damaging it. In this case it is possible to activate the parachute rescue system at the height of 2 to 3 meters above the top of the terrain during the horizontal flight and at the landing speed of the aircraft. The flight of the aircraft will be slowed down and it will fall from the minimum height. Damage to the aircraft is minimal.

Example 1
The parachute rescue system was used on an ultralight aircraft weighing 450 kg, aircraft speed 120 km/h, altitude 100 meters above the ground and the crosswind speed of 5 m/sec. The rocket engine 3 had the thrust of 700 N and its direction of flight trajectory was chosen perpendicular upwards to the horizon. Used parachute 5 with the canopy 6 E-120 had the area of 115 m^2, the weight of the parachute 5 was 8.6 kg.

After the start of the rocket engine 3 the inner container 10 with the compressed folded canopy 6 of the parachute 5 was pulled out in a controlled manner from the rescue system container 1 to the height of 15 m where the canopy 6 of the parachute 5 was pulled out from the inner container 10 after the thread lock was broken and subsequently the canopy 6 was stretched and opened. The inner container 10 in the shape of a cylinder had the length of 500 mm and the diameter of 170 mm.

The rocket engine 3 with the inner container 10 and the safety little parachute continued flying for another 4 to 5 meters where it burned out and went down along the ballistic trajectory. At that time the canopy 6 of the main rescue parachute 5 was already filled with air and the aircraft and its crew descended to the ground at the speed of 5.3 m/sec. There was minimal damage to the aircraft when it came into contact with the ground. The whole system proved its flawlessly functioning.

Example 2
The parachute rescue system was subjected to a test in which the rocket engine 3 was fired at the angle of 45° in the driving direction of the car, travelling at the speed of 100 km/h, the crosswind was blowing at the speed of 3 m/sec. The rescue system was placed on the car, on the platform which was simultaneously loaded with the weight of 200 kg connected to the connecting strap 11 of the parachute 5. The load was placed on the platform of the car so that it could safely slide off the platform at opening the canopy 6 of the rescue parachute 5 by the draw of this canopy. The whole process took place in front of the moving vehicle, the unwrapping of the compressed folded canopy 6 of the parachute 5 and its opening also took place without any defects. The canopy 6 of the parachute 5 was again folded in the inner container 10 with the smallest possible volume showing the form of the package.

The rescue parachute 5 landed on the ground behind the vehicle that passed under it. The rocket engine 3 also with the inner container 10 landed safely on the ground after the braking little parachute was opened. The system worked flawlessly. During this testing trial the rescue system proved the possibility and reliability of firing the rocket engine 3 even in the driving direction, respectively in the direction of flight of the aircraft.

PATENT CLAIMS

1. The parachute rescue system especially for ultra-light aircrafts, hang gliders and motor tricycles activated by the rocket engine to transport the parachute (5) into the safety distance from the ultralight aircraft, whereas the supporting cords (30) of the canopy (6) of the parachute (5), including the central cord (31) of the pole hole of the canopy (6) of the parachute (5) are connected to the connecting strap (11) anchored on the ultralight aircraft, and the canopy (6) of the parachute (5), folded into the separate inner container (10), is placed, including cords (30,31) and the connecting strap (11) in the container (1) fixed on, respectively in the ultralight aircraft, while the inner container (10) being connected to the rocket engine (3) which is housed in the rocket launcher (2) mounted on the container (1), **characterized in that** the inner container (10) is provided with the thread lock to ensure its opening only when the supporting cords (30) of the canopy (6) of the parachute (5) and the connecting strap (11) are fully stretched, while the volume of the inner container (10) corresponds to the volume in the form of the package of compressed folded canopy (6) of the parachute (5).

2. The rescue parachute system according to claim 1, **being characterized in that** the rocket engine (3) housed in the launcher (2) is protected by the cover (4) fitted with the transport lock (19).

3. The rescue parachute system according to claim 2, **being characterized in that** the rocket motor (3) is provided with the trigger (17) connected by the control cable (14) to the handle (18) for the mechanical control of the rocket engine (3).

4. The rescue parachute system according to claim 3, **being characterized in that** the trigger (17) is formed by a double firing pin (16) attached to a pair of starting cartridges (15).

5. The rescue parachute system according to claim 2, **being characterized in that** the container (1) connected to the rocket launcher (2) is provided with the mounting bracket (7).

6. The rescue parachute system according to claim 5, **being characterized in that** the container (1) is arranged in the mounting bracket (7) in the adjustable manner, both in the horizontal and in the vertical direction.

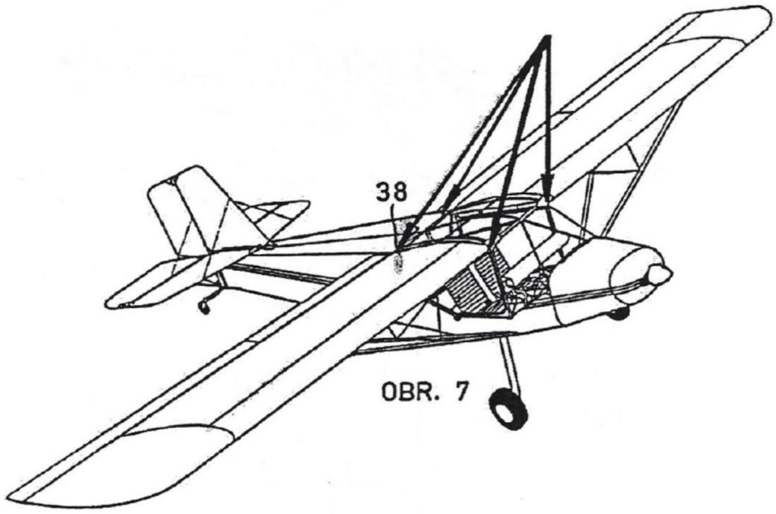
7. The rescue parachute system according to claim 5, **being characterized in that** the container (1) is provided in the front part with both the removable cover (8) with the ejector (9) of the removable cover (8), as well as the primary lock (20) of the removable cover (8) and with the secondary lock (25) of the removable cover (8).

8. The rescue parachute system according to claim 5 and 7, **being characterized in that** between the body of the container (1) and the removable cover (8) of the container (1) there is led the connecting strap (11) terminated by the screw snap-ring (12), as well as the connecting rope (13) connected at its one end to the inner container (10) and at its other end connected to the rocket engine (3).

9. The rescue parachute system according to claim 5, **being characterized in that** the container (1) is divided in the direction of its longitudinal axis (21).

10. The rescue parachute system according to claim 9, **being characterized in that** the longitudinal axis (21) of the container (1) is concurrent or skewed towards the axis (22) of the symmetry of the rocket engine (3).

5 Drawings



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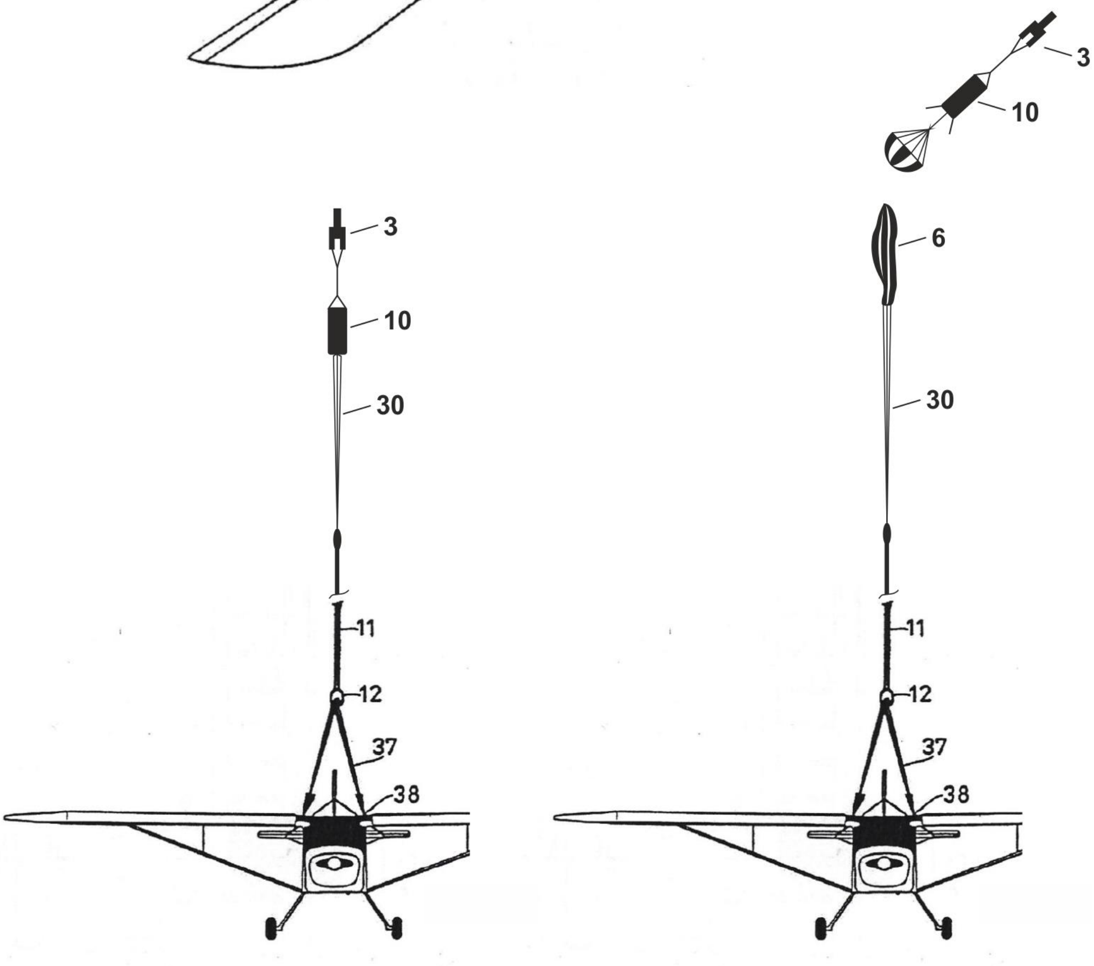

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