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BY A. P. C.

I. KERTÉSZ
PARACHUTE EQUIPPED AIRPLANES
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Fig. 1

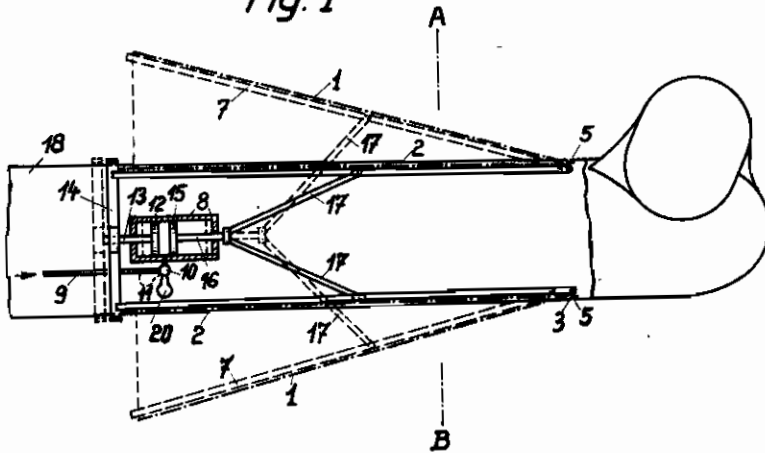


Fig. 2

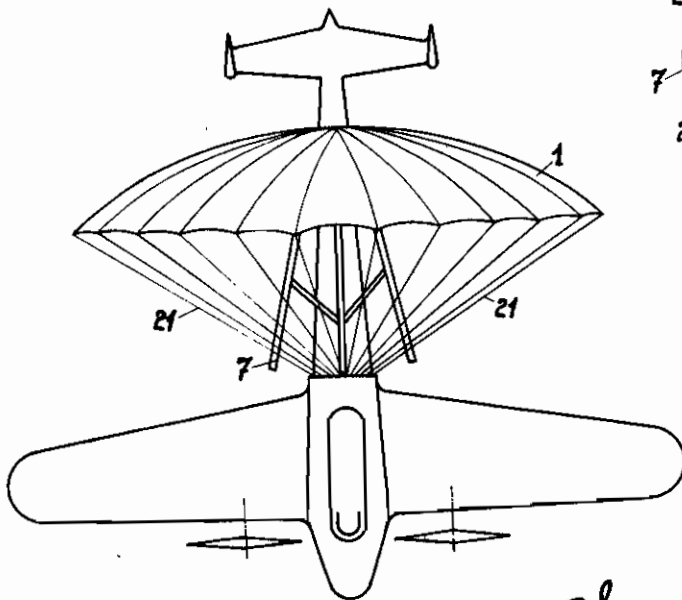
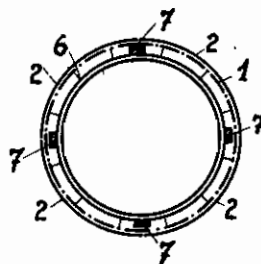


Fig. 3



Inventor
I. Kertesz
By C. F. Wenderoth
Atty.

ALIEN PROPERTY CUSTODIAN

PARACHUTE EQUIPPED AIRPLANES

Imre Kertész, Balatonboglár, Hungary; vested
in the Alien Property Custodian

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Most accidents suffered by aircraft are due a stoppage, for some reason or other, of the engine. In this case the air propeller ceases to drive air below the wings, and in consequence thereof the airplane loses its stability. In view of the fact that it is in front, where the engines are situated, that the greatest load is placed, the airplane will topple into a vertical position, with engines downwards, and will drop with a uniformly accelerated speed. In view of the fact that in this direction the resistance offered by the air to the motion of the airplane is small, the airplane will drop with an acceleration nearly as great as if it were dropping in a vacuum, and therefore the passengers will not have sufficient time to save their lives by jumping out with the aid of parachutes.

The invention relates to a parachute-equipped airplane the arrangement being such that as the airplane topples into the vertical position either the parachute will open automatically, or by means controlling the opening of the parachute operated by the pilot.

The invention consists substantially in that a folded up parachute covered by a detachable sheath is provided along the trunk of the airplane which parachute, as soon as the airplane assumes the vertical position, will become deflected and, following this, will drop from the frame.

The surface of resistance, becoming increased by the surface of the opened parachute will substantially reduce the acceleration of the fall and will thus enable the passengers to jump off with the aid of parachutes. Moreover, as the airplane itself also will reach the ground at a much lower speed, the airplane itself also will suffer substantially less damage than would be suffered by an airplane dropping by free fall.

Whilst an airplane having a weight of 2000 kg will, when dropping from a height of 1000 metres, reach the ground within a time of 15 seconds and at a speed of 134 metres per second, an airplane having the same weight, but equipped with a parachute of 10 metres diameter, will reach the ground in $4\frac{1}{2}$ minutes, and at a speed of only 7.29 metres per second.

The accompanying drawing illustrates an embodiment shown by way of example, of the invention:

Fig. 1 is a side elevation—partly in section—of the parachute-equipped airplane, the parachute being shown in the closed and in the partly opened condition.

Fig. 2 is a front elevation of the airplane according to Fig. 1, during its fall.

Fig. 3 is a vertical cross-section taken along plane A—B of Fig. 1.

A parachute 1 is mounted on the trunk 18 of the airplane. A plurality of arcuate sheets 2, situated alongside each other in the longitudinal direction, and forming in their totality the surface of a small-angled truncated cone, form a sheath around the trunk 18 of the airplane. These sheets are fixed on the trunk 18 in such a manner that their front edges are held down by a ring 4 reinforced by the arms 14, whilst the rear edges 3 of the sheets project below the edge 5 of the airplane trunk, owing to which arrangement the sheets 2 are fixed in their respective positions. Below the sheets 2 there are arranged, between the longitudinals 6 of the airplane (Fig. 3), a number of parachute-opening ribs 7, e. g. four such ribs). The material of the parachute 1 is placed below the sheets 2 on the longitudinals 6 and on the ribs 7. The ends, projecting below the edge 5 of the trunk, of the ribs 7 are connected with the frame of the airplane by means of joints 19. It is at the same place that the upper edge of the parachute 1 also is fixed to the frame.

In the interior of the airplane trunk a cylinder 8 is provided, into which compressed air is made to flow from a container, not shown, through pipe 9 and cock 10. The cock 10 is opened by the arm 11 which can be adjusted by the pilot by means of an operating rod. In the case of another arrangement, the arm 11 carries a weight 20 which turns the arm always into the vertical direction. Accordingly, if the airplane gets into the vertical position, the arm 11 will be deflected into the position shown in dotted lines on Fig. 1 and will thus open the cock 10. The cylinder 8 contains two pistons. The piston 12 stands in connection, through the piston-rod 13 and the reinforcing arms 14; with the ring 4, whereas the piston 15 is connected through the piston-rod 16 with the rib-lifting rods 17 connected articulately with the end of the said piston-rod, the said rib-lifting rods being fixed articulately to the ribs 7. The holding cords 21 sewn to the lower edge of the parachute are tied below the ring 4 to the inner frame of the airplane.

The parachute-equipped airplane operates in the following manner:

At the moment when the airplane topples into the vertical position and begins to drop, the arm 11 is either brought into the vertical position by the pilot, or turns into this position under the action of a weight, and opens the cock 10. The

compressed air flowing into the cylinder 8 drives the pistons 12 and 15 into the positions shown in dotted lines. The piston 12 displaces, by means of the rod 13, the ring 4, whilst the piston 15 lifts, through the rod 16, the ribs 7 (shown in dotted lines in Fig. 1). The sheets 2, having become released from the clamping effect of the ring 9, will become detached and drop down. In

the meantime the airplane begins to sink and the air current of growing intensity will lift the parachute placed on the ribs 7 (Fig. 2); the fall will, in consequence of the large surface of the parachute, take place at a slow rate, so that the pilot and the passengers will have sufficient time for jumping out with the aid of parachutes.

IMRE KERTÉSZ.