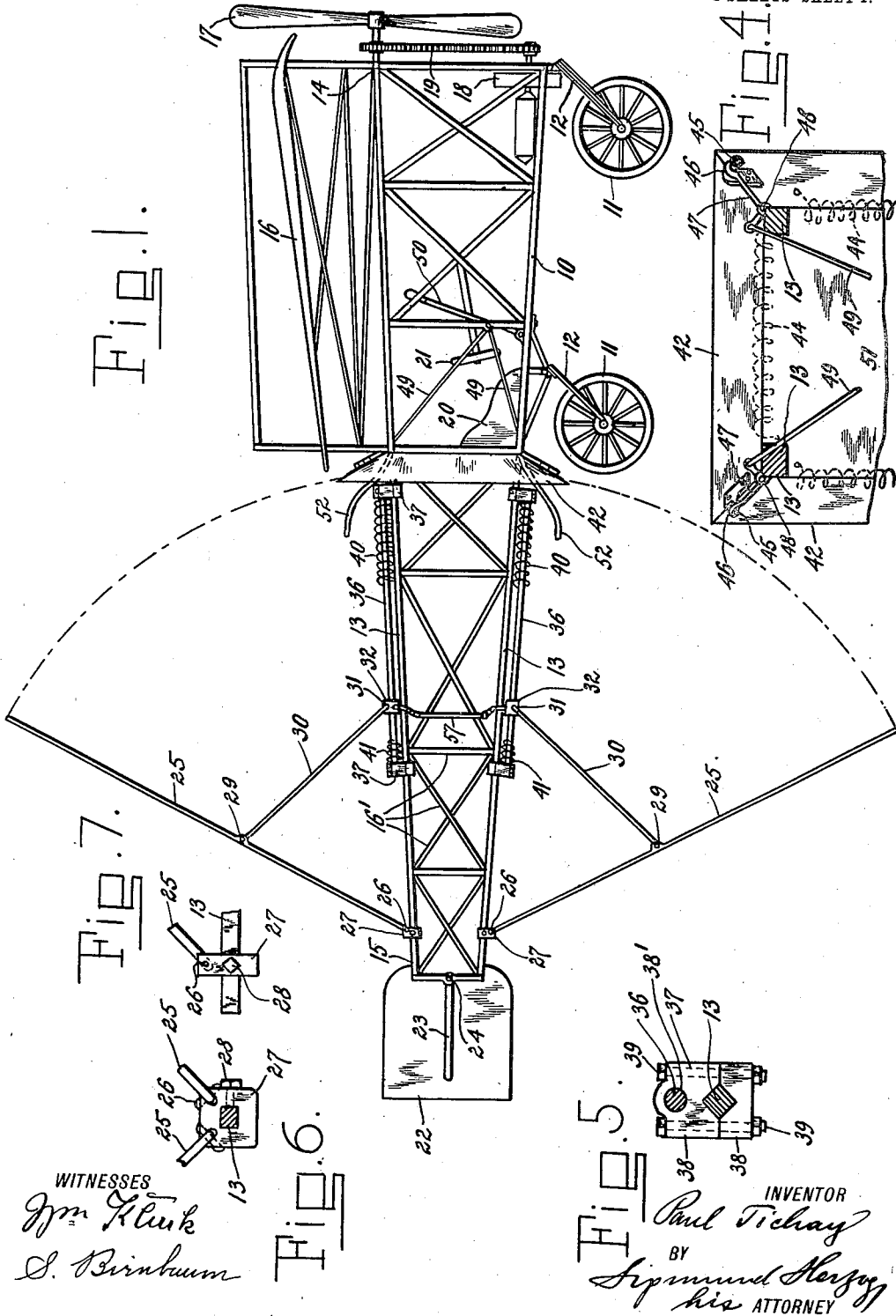


P. TICHAY.
ATTACHMENT FOR AEROPLANES.
APPLICATION FILED NOV. 12, 1912.

1,060,958.

Patented May 6, 1913.

2 SHEETS—SHEET 1.



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2 SHEETS-SHEET 2.

Fig. 2.

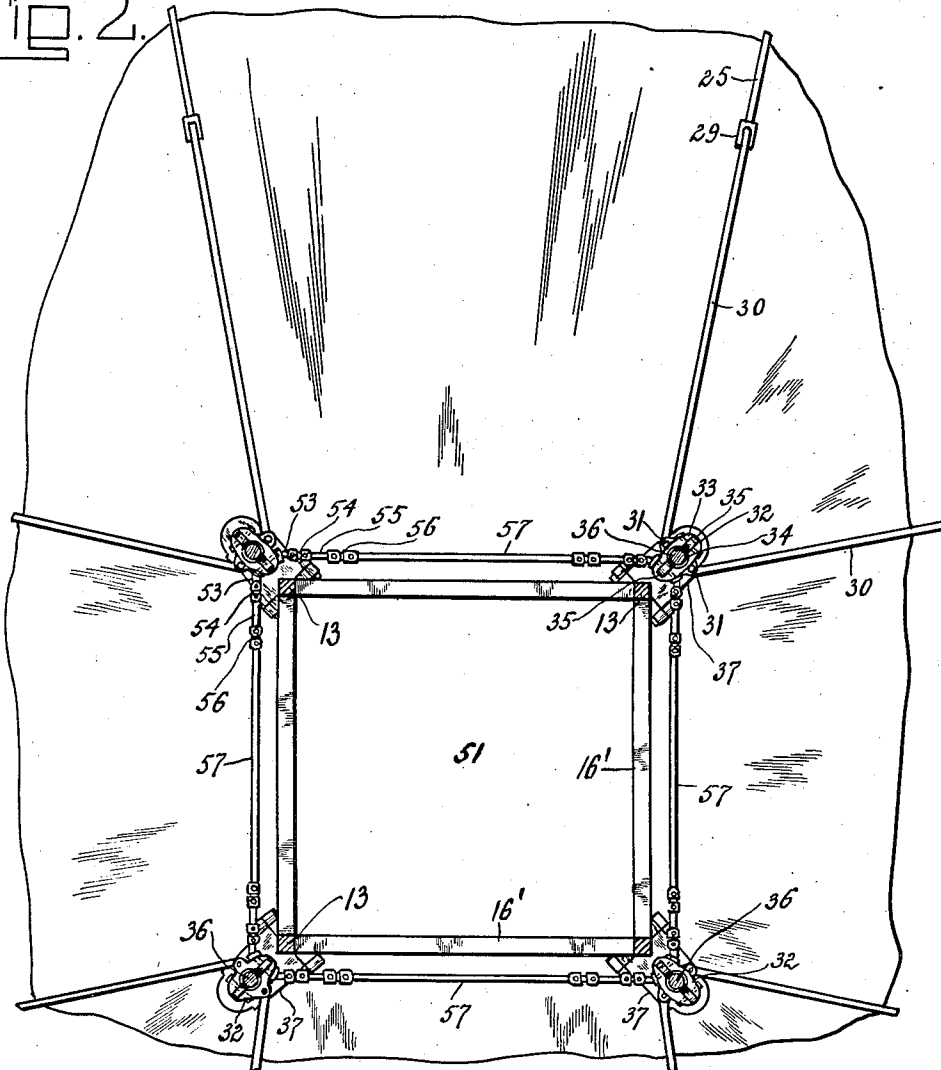
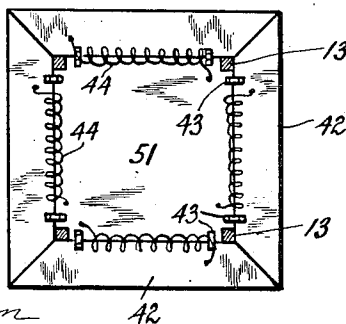


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ATTACHMENT FOR AEROPLANES.

1,060,958.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed November 12, 1912. Serial No. 730,940.

To all whom it may concern:

Be it known that I, PAUL TICHAY, a subject of the Emperor of Austria-Hungary, and resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Attachments for Aeroplanes, of which the following is a specification.

The present invention relates to an attachment for aeroplanes, and has for one of its objects to produce a safety device which will prevent, in case of accident, the overturning of the aeroplane and allow the same to descend safely to the ground.

Another object of the invention is to produce a device of the character mentioned which is simple in construction, efficient and positive in operation, and which can be attached without substantial cost to aeroplanes of any suitable type or construction.

With these and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claim and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and minor details of construction within the scope of the appended claim without departing from the spirit or sacrificing any of the advantages of the invention.

The safety device is of the parachute type.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of an aeroplane with the safety device constructed in accordance with the present invention in nearly open position thereon, only two of the ribs and stretchers of the parachute being shown; Fig. 2 is a vertical section taken through the aeroplane on an enlarged scale; Fig. 3 is a rear elevation of the means for holding the parachute in its closed position; Fig. 4 is a front elevation of a portion of the means shown in Fig. 3; Fig. 5 is a front elevation of a detail of construction; Fig. 6 is a front elevation of the means for attaching the ribs of the parachute to the frame of the aeroplane; and Fig. 7 is a side elevation of the device shown in Fig. 6.

In the drawings, the numeral 10 indicates

the main frame of the aeroplane, which may be supported upon the ground in any suitable manner, such as for instance by means of rollers or wheels 11, which are connected to the frame by means of resilient members 12 in the form of leaf springs, inclining downward from their points of engagement with the frame toward the rear, so that all shocks of alighting will be automatically absorbed. The main frame comprises four bars 13, 13, which extend rearwardly, the distance between the same decreasing from their front ends 14 toward their rear ends 15. These bars are connected by a plurality of struts or braces 16', forming thereby a rigid and light structure.

For the purpose of supporting the machine in the air, there may be provided one or more supporting planes 16 of any suitable structure. These planes may be secured to the frame 10 in any suitable manner.

The machine may be driven through the air by any suitable means, for instance by a propeller 17, connected with a motor 18 of any suitable type through the intermediary of a chain and sprocket connection 19. In rear of the engine is arranged the operator's seat 20, in front of the latter being arranged a steering wheel 21 which serves to actuate the rudder, comprising a vertical plane 22 and a horizontal plane 23, which are connected to the rear of the frame by a universal joint 24. The connection between the rudder and steering wheel is not shown as the same is well known and does not form part of the present invention.

The safety attachment forming the subject matter of present invention comprises a parachute, which consists of a number of ribs covered by a suitable impervious cloth or other flexible material, said ribs being connected to the frame by a plurality of stretchers or braces, means being provided for opening the parachute, as will be hereinafter described. The ribs of the parachute are denoted by the numerals 25, 25, there being provided in the device shown in the drawings eight ribs, which are arranged in pairs. Each pair of ribs is pivotally attached at 26, 26 to a lug 27, the latter being fastened by means of a screw 28, or otherwise, to one of the bars 13, which are of quadrangular cross section. To each rib is pivoted at 29 one end of a brace 30, the other end of which is fulcrumed at 31 to a runner 32. The braces 30 are also arranged in pairs,

each pair of braces being fulcrumed to a runner 32. Obviously there are as many runners as lugs 27. Each runner comprises an oblong sleeve 33, provided with a central bore 34 and with two rollers 35, which project into the bore 34 and are slidably arranged upon a guide rod 36. There are four guide rods 36, corresponding to the number of quadrangular bars 13 of the main frame. The rods 36 are arranged at a suitable distance from the rods 13, and are held in parallel relation thereto by blocks 37, 37. One of the blocks 37 is shown in detail in Fig. 5 of the drawings, and comprises two parts 38, 38, which are held upon the bar 13 by bolts 39, 39. The guide rod 36 passes through an aperture 38' in the upper one of the parts 38. In the rear of the front blocks 37 are arranged springs 40, which are wound upon the guide rods 36 for a purpose hereinafter to be described. In front of the rear blocks 37 are coiled upon the guide rods 36 springs 41, against which the runners 32 bear when the parachute is being opened, serving thus to absorb the shock.

The means for holding the parachute in its closed inoperative position comprises a plurality of trapeziform plates 42, 42, which are hinged at 43, 43 to the main frame and form, when in the positions shown in Fig. 1 of the drawings, a frustum of a pyramid. The means for holding the plates 42 in these positions against the action of springs 44 comprises studs 45, held upon both ends of the horizontal plates 42, said studs being engaged by the hook shaped ends 46 of bellcrank levers 47, which are fulcrumed at 48 to the vertical plates 42. The free ends of the bellcrank levers 47 are engaged by cords or other flexible connections 49, which are attached to an actuating lever 50 in front of the operator's seat 20. A vertical wall 51 bears against the front ends of the plates 42 to prevent the air, when the machine is floating, from entering the interior of the parachute when the latter is in its inoperative position.

A plurality of leaf springs 52, corresponding in number to that of the ribs 25, is arranged in front of the plates 42. The purpose of this arrangement will be presently described.

It is obvious that, when the parachute is being opened, the runners 32 must move simultaneously and at substantially the same speed. For this purpose the runners must be interconnected. Inasmuch as, however, the distance between the bars 13 decreases toward their rear ends 15, the connection between the runners must be made flexible. To this end are arranged upon each runner two lugs 53, to which are secured by means of universal joints 54, 54 links 55, 55, which are by universal joints 56, 56 connected to rods 57, 57, which are, in

turn, coupled by universal joints to the links of the runners upon the juxtaposed guide rods 36.

The operation of the device is as follows: When the parachute is closed, the free ends of the ribs 25 rest against the springs 52. The plates 42 are held in their closed positions, that is to say their studs 45 are engaged by the hook-shaped ends 46 of the bellcrank levers 47. The said plates engage the free ends of the ribs 25, and thereby hold the parachute against the action of the springs 52 and the springs 40 in a closed inoperative position. It is to be noted that, when the parachute is closed, the runners 32 bear against the coiled springs 40, said springs being compressed as the parachute is being closed. The springs 52 are also held under the tension when the parachute is closed. When, due to some engine trouble or for some other reason, the planes 16 are unable to sustain the machine in the air, the aeroplane will fall headlong, that is to say with its front part pointing toward the ground. This is due to the fact that is center of gravity is nearer to its front end than to its tail end. As soon as an accident happens, the operator forces the lever 50 toward the front of the machine, whereby the hook-shaped ends of the bellcrank levers 47 are disengaged from their studs 45. This will result in a motion of the plates 42 around their hinges toward the front of the machine, permitting thus the springs 52 and 40 to act. The springs 52 give an initial outward movement to the ribs 25, after which the springs 40 force the runners 32 toward the rear blocks 37 until they strike against the springs 41. The parachute is thus opened, and, inasmuch as the longitudinal axis of the aeroplane is nearly vertical in case of an accident, the said parachute will cause a safe descent of the aeroplane to the ground.

While herein the invention has been described in connection with a particular type of aeroplane, it is to be observed that the same can be applied to others just as well. It is to be observed, however, that if the center of gravity of the aeroplane is located near the tail end of the same, that is to say if the aeroplane has a tendency to fall with its tail end pointing toward the ground, the invention must be applied to the front of the aeroplane.

It is to be observed that the guide rods 36 may be held in substantially vertical positions upon the aeroplane without departing from the spirit of the invention.

What I claim is:—

In a safety attachment for aeroplanes, the combination with the main frame of an aeroplane, of a plurality of ribs pivotally attached in pairs thereto, a cover of impervious material secured to said ribs, a plurality

of guide rods fastened to said main frame, a runner slidably arranged upon each guide rod, the number of said runners corresponding to half of that of said ribs, two braces
5 connecting each pair of said ribs to one of said runners, a plurality of springs adapted to bear against said runners to extend by the intermediary of said braces said ribs, means for holding said ribs against the ac-
10 tion of said springs in their closed positions,

and means for disengaging said holding means from said ribs, substantially as and for the purpose specified.

Signed at New York, in the county of New York and State of New York, this 31st 15 day of October, A. D. 1912.

PAUL TICHAY.

Witnesses:

SIGMUND HERZOG,
M. FRIEDLANDER.