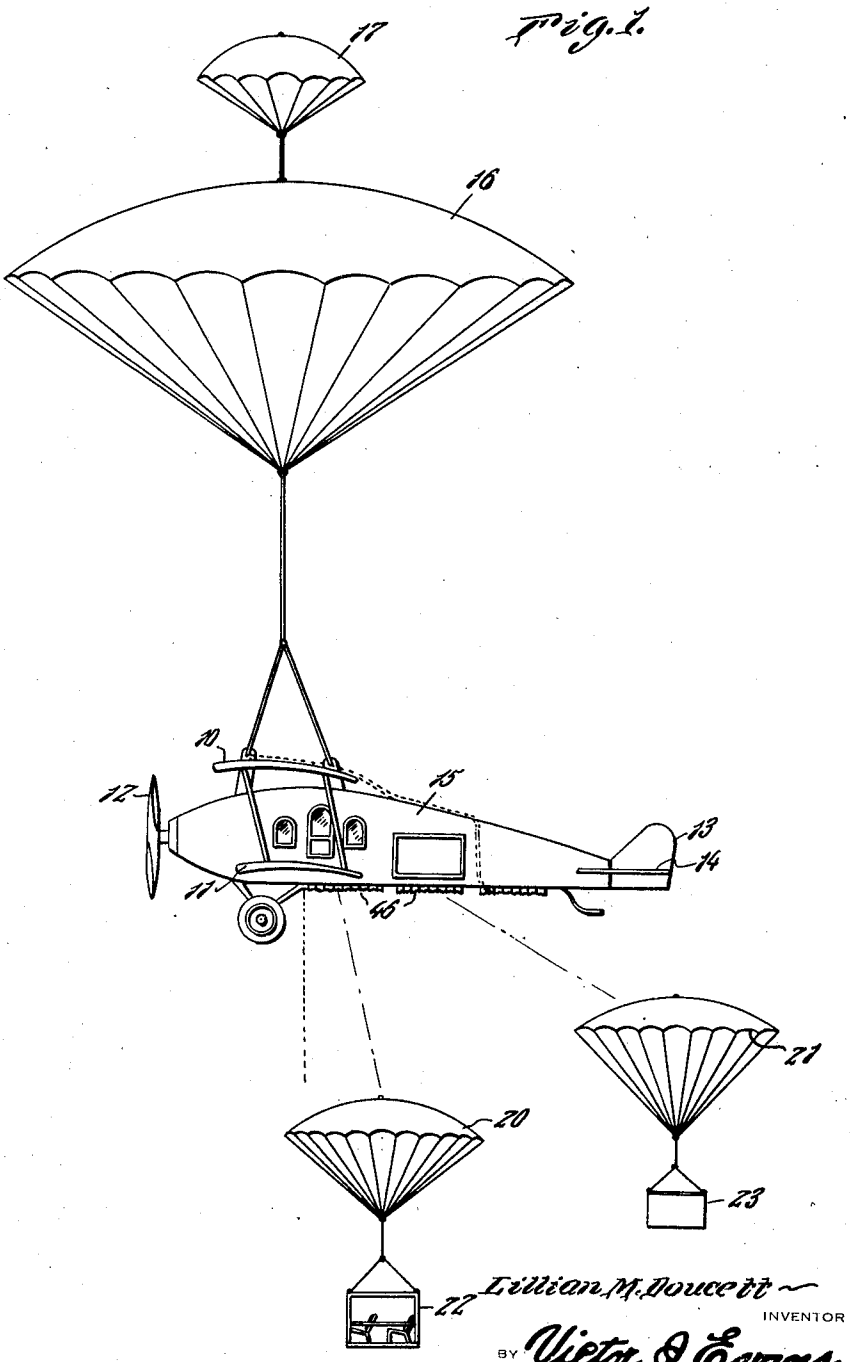
June 4, 1929. L. M. DOUCETT 1,715,742

SAFETY DEVICE FOR AEROPLANES

Filed March 23, 1927 4 Sheets-Sheet 1

Fig. 1.



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SAFETY DEVICE FOR AEROPLANES

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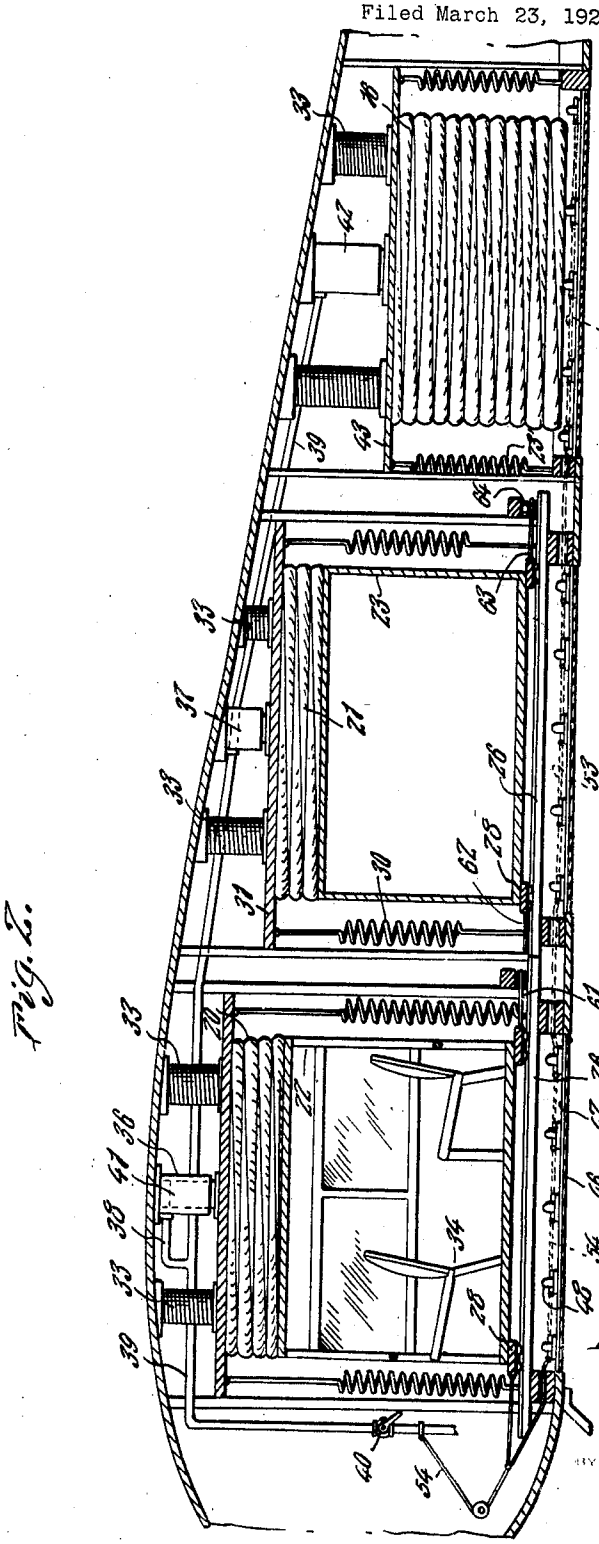


Fig. 2.

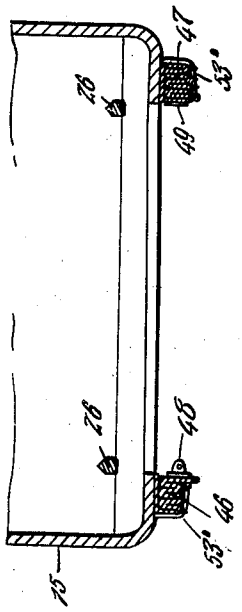


Fig. 6.

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SAFETY DEVICE FOR AEROPLANES

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Fig. 3.

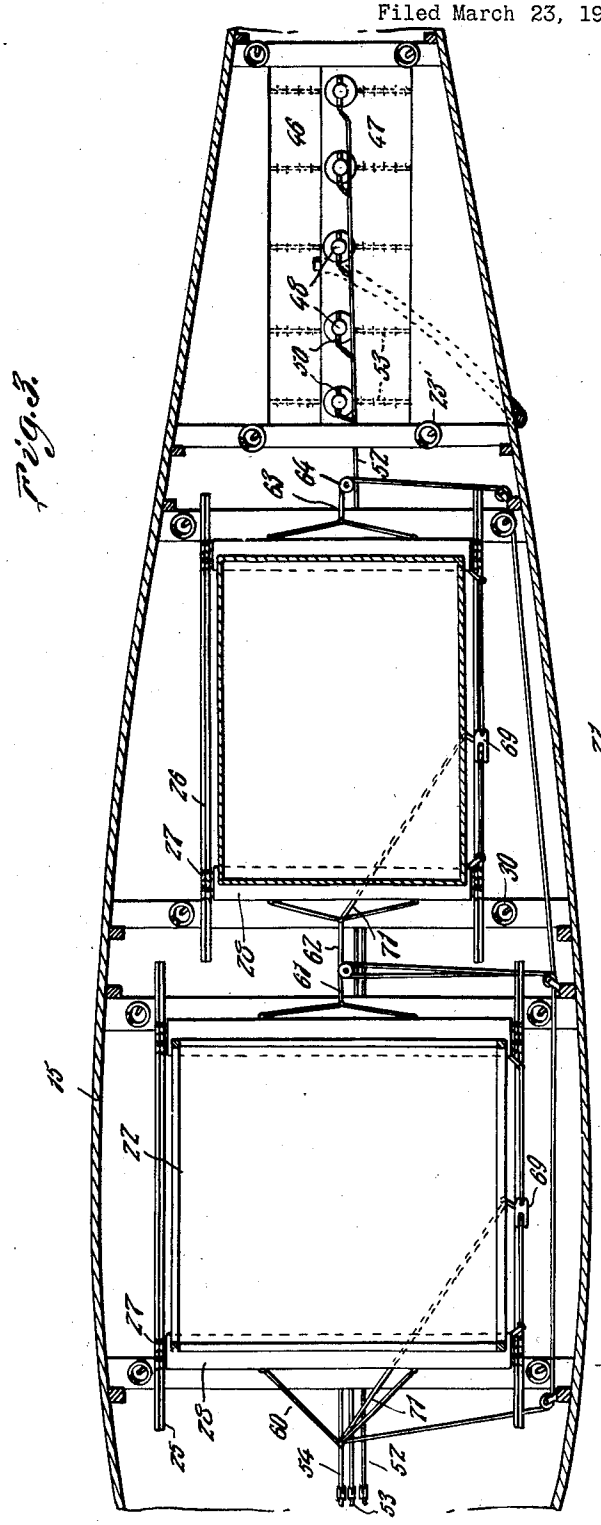
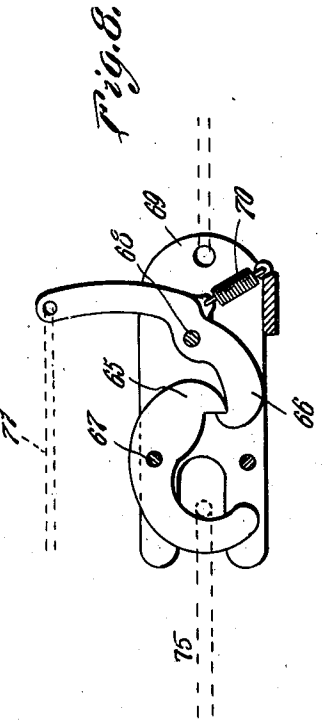


Fig. 6.



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SAFETY DEVICE FOR AEROPLANES

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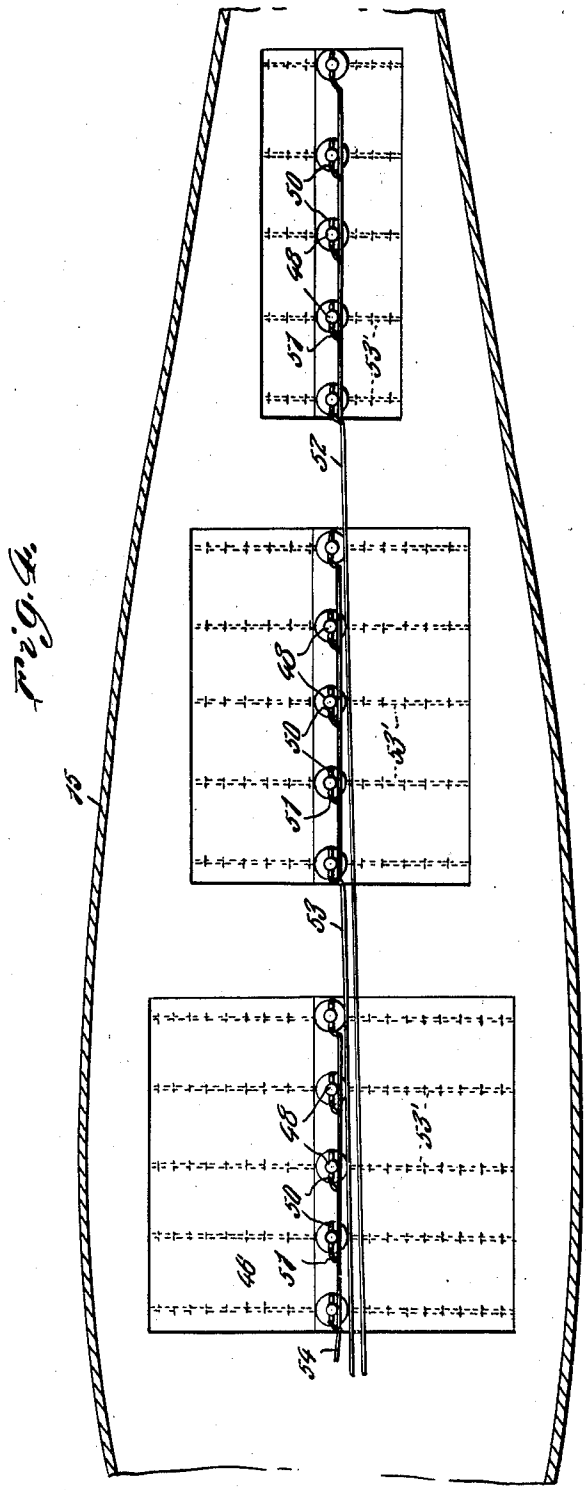


Fig. 4.

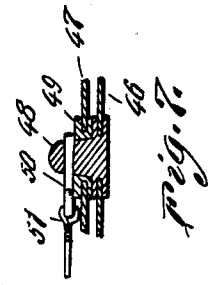


Fig. 2.

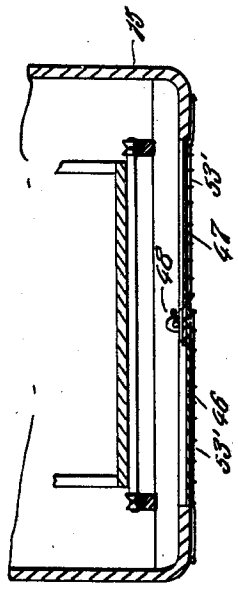


Fig. 5.

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Patented June 4, 1929. 1,715,742

UNITED STATES PATENT OFFICE.

LILLIAN MAE DOUCETT, OF SAN DIEGO, CALIFORNIA.

SAFETY DEVICE FOR AEROPLANES.

Application filed March 23, 1927. Serial No. 177,761.

The object of this invention is to provide means for effecting the safe landing of an aeroplane in the event of accident or failure of the engine or engines, and to provide independently for the safe landing of the passengers and cargo.

A further object is to effect this result by providing particular means for releasing a parachute of sufficient size to permit of the safe landing of the plane,—to provide a cabin or the like for passengers, with means for releasing the cabin as one compartment and insuring its safe descent by a separate parachute,—to provide similar means for landing the cargo.

A further object is to provide special means for discharging the structure carrying the passengers, and to make similar arrangements for the freight compartments and for the parachute connected directly with the plane, in order that they may be thrown clear of the plane, without danger of engagement or entanglement of any description.

A further object is to employ air controlled and spring controlled means in connection with the release of the devices referred to.

With the foregoing and other objects in view, the invention consists in the novel construction and arrangement of elements described, illustrated and claimed, it being understood that modifications may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming part of this application,

Figure 1 is a view showing an aeroplane in elevation, and showing a plurality of parachutes, the larger one permitting of the safe descent of the aeroplane, and the two in the lower part of the view providing respectively for the independent landing of the passengers' cabin and also the structure designed to carry freight.

Figure 2 is a view of the fuselage of the aeroplane in vertical longitudinal section, with the special internal construction described below.

Figure 3 is a view in horizontal section, showing the means for retaining and releasing the separate devices, serving the purpose indicated.

Figure 4 is a horizontal section on a lower plane than in Figure 3, and below the tracks on which the compartments are supported,—the means for releasing the inclosing elements being illustrated.

Figure 5 is a fragmentary view in vertical section showing means for supporting one of the carrying devices to be released.

Figure 6 is a fragmentary view in vertical section showing the flaps or inclosing means, normally covering the lower opening in the fuselage, as having been released and folded under spring action.

Figure 7 is a detail in section showing one of the retaining and releasing devices for connecting the flaps on the lower side of the fuselage.

Figure 8 is a detail view showing a plurality of pivoted elements or hooks employed in connection with some of the retaining and releasing devices.

In Figure 1 an aeroplane is shown conventionally and includes the wings 10 and 11, the propeller 12, the rudders 13 and 14 and the fuselage 15.

A main supporting element for use in landing the aeroplane especially in the event of accident or temporary difficulty with the operating mechanism, includes a parachute 16 which may have connected therewith a smaller retarding device 17. Parachute 16 is shown as being housed in the compartment at the right of Figure 2, and parachute 17 when employed would occupy the same compartment.

Also in Figure 1 I have shown parachutes 20 and 21, the former supporting the passengers' carrying device or cabin 22, which is detachably retained within the fuselage, in view of the mounting and controlling means described below. The parachute 21 supports a container or cargo carrying compartment embodying a main structure 23, and this device is retained and released in a manner similar to that employed in connection with the passengers' cabin.

Mounting devices for the structures to be released, and carrying the parachutes 20 and 21, include the tracks 25 and 26, and cooperating with these tracks are wheels or rollers, such as 27, the latter being carried by transverse elements or plates or bars such as 28. These elements 28 support the cabin 22 and the cargo compartment 23, and are adapted to release the latter, that is to release both of these structures 22 and 23, when the elements 28 are movable longi-

tudinally along the tracks, being normally retained in operative position as shown in Figure 2. The transverse elements or bars 28 are freely slidable from beneath the compartments 22, 23, and form their only support, prior to release.

When the release of the structures 22 and 23 is effected by means of the controlling devices referred to below, these structures thus released are forcibly ejected from the fuselage under the action of springs such as 30 having connection at their lower ends with stationary devices such as any means used for supporting the tracks, the springs having connection at their upper ends with followers, plates, or boards, such as 31 which bear respectively on the folded parachutes 20 and 21. The upper springs 33, compressed at the time the structures 22 and 23 are housed, now expand, and aid in the ejecting operation. Within the passengers' cabin 22 I have shown seats 34, and seats might also be provided in compartment 23 if passengers alone were to be carried.

I may provide additional means for forcibly releasing the structures 22 and 23, and therefore releasing the parachutes 20 and 21, and have shown air cylinders 36 and 37 having connection by means of branch pipes such as 38 with a main air pipe 39 thru which the flow of compressed air from a suitable source of supply is controlled by means of valve 40.

One of the pistons forming a part of the air ejecting means, is designated 41, and the cylinder 37 will be similarly provided, and likewise cylinder 42 located above the follower 43 for parachute 16. The pipe 39 extends to cylinder 42, and by the control of valve 40 all of the pistons within the cylinders will operate at one time, it being understood that the retaining devices 28 have been released, and that the resilient devices 23′ and 30, as well as upper springs 33 for the several parachute discharging means are also now operative.

Lower openings in the fuselage are closed by means of flexible elements 46 and 47 acting under the control of resilient devices, when released, and assuming the position of Figure 6, so that free passage will be provided for the discharge of the structures and the parachutes to be released.

In order to secure the adjacent edges of flexible elements 46 and 47, I employ a plurality of pins, lugs, or approximately cone-shaped devices designated 48 and adapted to receive ring-like members 49, these devices 48 and 49 being located upon approaching edges, and being retained in operative or connected position by means of pins 50, constituting locking devices. These pins are released simultaneously, in view of their connection by means of short connecting devices 51 with main cords 52. When the release has been effected, in the manner referred to, the resilient elements 53′ operate to draw back the flexible members 46 and 47. Elements 53′ may be elastic cords, having their ends secured to the edges of flexible elements 46, 47, in any manner desired by the mechanic.

In Figure 4, the cord 52 and cords 53 and 54 control the several series of locking pins 50, and these retaining devices are therefore released simultaneously, if all of the cords are operated or tensioned at about the same time.

The transverse retaining devices 28 are released by placing tension on the cords directly connected therewith and designated 60, 61, 62, and 63, pulleys such as 64 serving to guide the cords.

In Figure 8 I have shown a plurality of inter-engaging devices including hooks 65 and 66, pivoted respectively at 67 and 68 on mounting means 69, the element 66 being controlled in part by spring 70.

The tripping hook 66 is released by cord 71, and tension on the latter against the action of spring 70 releases this hook 66 from holding hook 65 having cable connected therewith. Another cable is connected with the mounting device 69. This structure of Figure 8 may be employed between the aeroplane and the safety device represented by parachute 16, and is adapted for operation for releasing the parachute, if the latter is in substantially the position of Figure 1, but the aviator finds that he may again proceed under power, and no longer requires the use of the parachute as a safety device. The structure of Figure 8 may also be employed as shown in Figure 3, in connection with the control of the retaining and releasing bars, plates, or devices 28. In order to accomplish this, slidable compartment-supporting bars 28 are normally connected by cords 75 and the engaging hook-like devices, and are released by a pull on cord 71.

In operation, cords 52, 53, are pulled, for opening flexible elements 46, 47, and then cord 54 is pulled for releasing transverse bars 28 which slide from beneath the compartments 22, 23, and the latter drop by gravity, and under the action of springs 30, assisted by air pressure in upper cylinders 36, 37. Parachutes 20, 21 open at this time, and parachute 16 is released by cord 52, but of course may have been freed before compartments 22, 23, so that the machine will descend more slowly than the compartments.

Having described the invention what is claimed is:—

1. In apparatus of the class described, an aeroplane including a fuselage having an opening in the lower portion thereof, flexible devices for closing the opening, retaining means for the flexible devices, means for operating and releasing the retaining

means simultaneously, and means for moving the flexible devices laterally under resilient action upon the release of the retaining means.

2. In a safety device for aeroplanes, a container adapted to be discharged downwardly from a fuselage, a follower above the container, air operated means including a cylinder and piston exerting downward pressure on the follower, and tension springs connected with the under side of the follower and acting jointly with the piston for imparting downward movement to the follower.

In testimony whereof I affix my signature.

LILLIAN MAE DOUCETT.