

Dec. 3, 1963

J. A. GAYLORD
CANOPY SPILLER

3,112,907

Filed Feb. 12, 1962

2 Sheets-Sheet 1

Fig. 1.

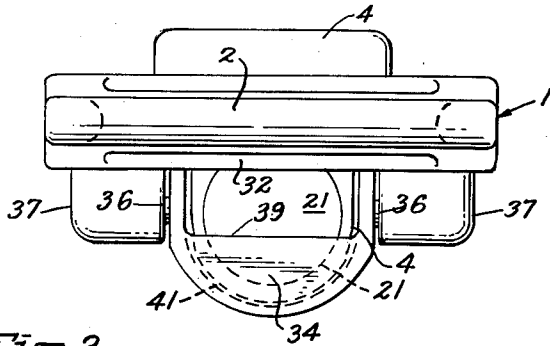


Fig. 2.

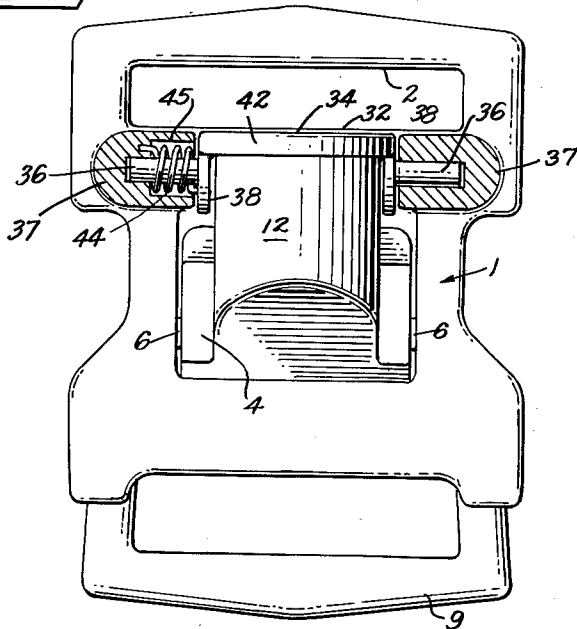


Fig. 4.

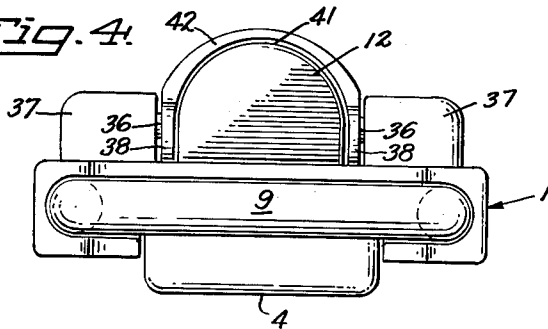
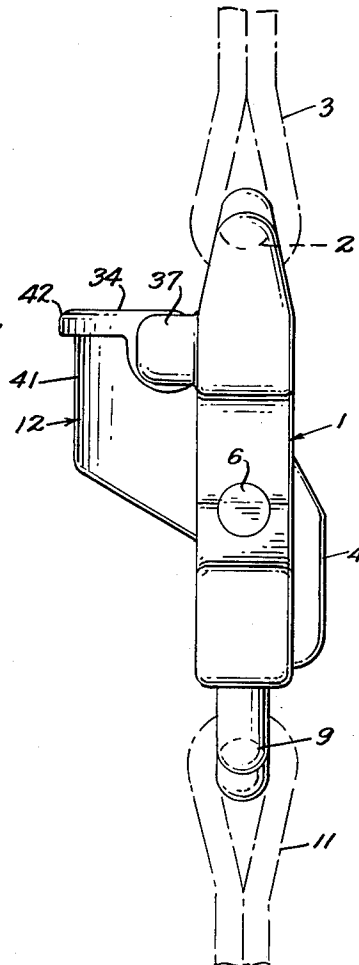


Fig. 3.



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Fig. 5.

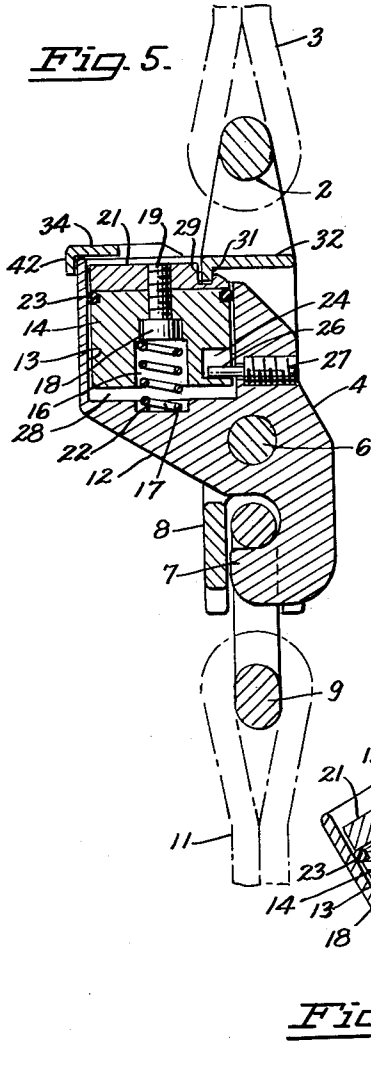


Fig. 6.

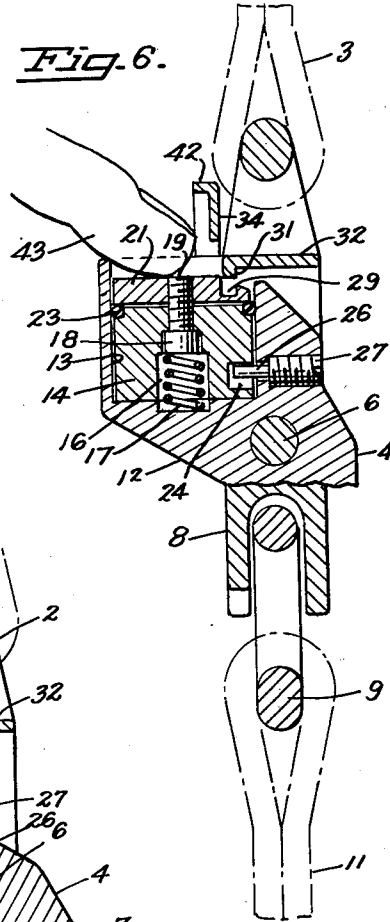
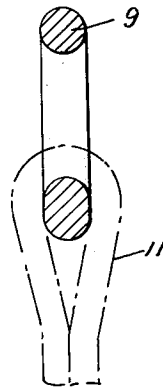
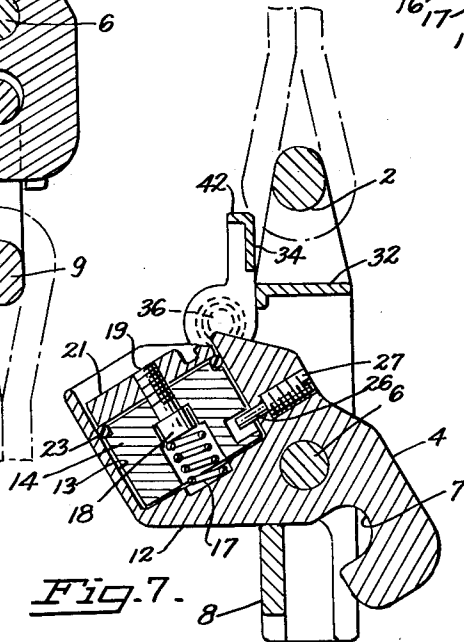


Fig. 7.



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CANOPY SPILLER

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3 Claims. (Cl. 244—151)

This invention relates to a canopy spiller and particularly to a one finger operated canopy spiller.

Usually the parachute canopy is connected by suitable straps to the harness of the person descending toward the ground. It is essential, especially after landing, that the canopy be rapidly released and it is vital that such release be accomplished speedily, almost instantaneously and positively with the minimum effort.

The primary object of this invention is to provide strap connection with a release that can be operated by one finger with minimum force yet positively and instantaneously, but which, in its locked position, establishes a connection which cannot be accidentally jarred or otherwise opened or released; positive locking as well as instantaneous and easy release being essential accomplishments of the present invention.

I am aware that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the following specification, and as defined in the following claims; hence I do not limit my invention to the exact arrangements and combinations of the said device and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

With the foregoing and other objects in view, which will be made manifest in the following detailed description, reference is had to the accompanying drawings for the illustrative embodiment of the invention, wherein:

FIG. 1 is a top plan view of a canopy spiller constructed in accordance with my invention.

FIG. 2 is a front view of my canopy spiller partly in section.

FIG. 3 is a side view of my canopy spiller.

FIG. 4 is a bottom plan view of the canopy spiller.

FIG. 5 is a longitudinally sectional view of the canopy spiller in locked position.

FIG. 6 is a longitudinal sectional view of the canopy spiller in position ready to be opened and

FIG. 7 is a sectional assembly view showing the canopy spiller open.

The canopy spiller of this invention includes a frame 1 which has a slot 2 formed in the top thereof to accommodate the usual loop 3 of a strap, as shown in FIG. 3.

The central portion of the frame forms a generally rectangular opening, in which is swingably positioned a tumble bar 4 pivoted on a crosspin or pivot pin 6 which latter in turn is secured in the opposite sides of the frame 1. The portion of the tumble bar 4 below the pivot pin 6 is formed into a hook 7 which in the vertical position of the tumble bar 4, as shown in FIG. 5, is opposite to and is covered by a front plate 8 of the frame 1. Thus a ring 9 engaging the hook 7 would be securely held in position because it would be prevented from disengaging the hook 7 by the front plate 8 of the frame 1. A strap loop 11 can be secured in the usual manner into the ring 9 to accomplish the connection between the separable straps of a canopy support.

The portion of the tumble bar 4 above the pivot 6 is formed into a body 12 which projects forwardly or to same side of the frame 1 where the abutment plate 3 is located. This body 12 is of such size that it can be swung inwardly into the frame opening and be positioned

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therein as shown in FIGS. 5 and 6, but it may be also swung outwardly to the open position shown in FIG. 7.

In the body 12 of the tumble bar 4 is provided a generally circular cavity 13 which is open at the top. In the cavity 13 is positioned a safety button 14. In the bottom of the safety button 14 is provided a central socket 16 in which is nested a coil spring 17. This coil spring 17 bears against the head 18 of a screw 19. The screw 19 is threaded into a button top 21 on the top of the safety button 14 fastening the button top in position.

The other end of the coil spring 17 rests in a pocket 22 in the bottom of the cavity 12. An O ring 23 is located in a suitable recess around the safety button 14 at the base of the button top 21. On one side of the safety button 14 is a slot 24 which rides on a limit pin 26 on the end of a set screw 27 threaded into the rear of the tumble bar 4, as shown in FIGS. 5, 6 and 7, so that the limit pin 26 projects into the slot 24 and limits the movement of the safety button 14 outwardly from the cavity 13 to the position shown in FIG. 5, thereby leaving a limited clearance or space 28 between the bottom of the safety button 14 and the bottom of the cavity 13.

In the top 21 on the safety button 14 is provided a transverse notch 29 which is adapted to engage a lip 31 extended downwardly from the top cross member 32 above the opening in the frame 1, as shown in FIG. 5. The notch 29 can be disengaged from the lip 31 by pressing the button 14 down into the cavity 13 against the action of the coil spring 17 in the manner shown in FIG. 6.

A safety cap 34 is pivoted by shafts 36 in lugs 37 which latter project forwardly from the sides of the frame 1 as shown in FIGS. 2 and 3. Ears 38 extend downwardly from the safety cap 34 and the shafts 36 project from the respective ears 38. The safety cap 34 has an opening 39 therein. The outward edge of the safety cap 34 is semi-circular generally conforming to the semi-circular outer wall 41 of the body 12. A correspondingly semi-circular flange 42 on the semi-circular edge of the safety cap 34 fits over the outside of the front wall 41 of the cavity 13, as shown in FIG. 5, to positively hold the tumble bar 4 in position shown in FIG. 5.

The rear top portion of the button top 21 as well as the rear portion of the walls of the cavity 13 are tapered, as particularly shown in FIG. 7, so as to facilitate passing by the lip 31.

In operation, as shown in FIG. 6, the safety button is depressed by a finger 43 and when pushed into the position shown in FIG. 6 and then released, the notch 29 will engage the lip 31, as shown in FIG. 5, and thus the tumble bar 4 will be positively locked in position. For further safety a coil spring 44 is provided on at least one of the pivot shafts 36 of the safety cap, as shown in FIG. 2. The spring 44 is anchored at one end in the bottom of the socket 45 in the adjacent lug 37 and at the other end in the adjacent ear 38 in such a manner that the torsion spring normally urges the shaft 36 and the safety cap 34 into the closed position, shown in FIG. 5.

Thus in the position shown in FIG. 5, the removable ring 9 is securely locked and cannot be accidentally released, namely both the safety cap 34 must be lifted and the button 14 must be depressed to disengage the lip 31 for releasing the ring 9. Such deliberate release, however, can be accomplished with minimum effort by placing the finger under the flange 42 of the safety cap 34 and pushing the safety cap up into the position shown in FIG. 6, and substantially simultaneously depressing

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the button 14, as shown in FIG. 6, and slightly moving the tumble bar 4 outwardly toward the position shown in FIG. 7 until the notch 29 clears the lip 31, whereupon the pull exerted on and by the ring 9 will swing the tumble bar to open position for releasing the canopy or the strap attached to the ring 9.

In the aforesaid invention, therefore, positive locking of the ring 9 and the canopy strap can be accomplished so as to prevent dangerous accidental release, yet release can be achieved without complicated manipulation by simple movement and pressure exerted by one finger, and by utilizing partly the pulling force on the strap 11 and the ring 9.

I claim:

1. A canopy spiller comprising,
 - a frame adapted to be engaged by a suspension line and having an opening therethrough,
 - a tumble member located in said opening and being pivoted in said frame for swinging into and out of said opening,
 - a hook on the tumble member for receiving the loop of another suspension line,
 - a frame element coacting with said hook to retain said loop in said hook when said tumble member is located in said opening, said hook being swung away from said frame element as said tumble member is swung out of said opening,
 - releasable means to lock said tumble member in loop retaining position in said opening including an abutment member in said tumble member,
 - a locking member on said frame engaged by said abutment member so as to lock said tumble member in said loop retaining position,
 - means to resiliently urge said abutment member into engagement with said locking member,
 - said abutment member projecting to one side of said frame opening to be accessible to be pressed against said resiliently urging means for release from said locking member and for swinging said tumble member out of said opening, thereby to release said loop,
 - a detent cap pivoted on said frame and extending over said abutment member and preventing the swinging of said tumble member out of said opening,
 - and resiliently yieldable means normally to urge said detent cap into engagement with said tumble member.
2. A canopy spiller comprising,
 - a frame adapted to be engaged by a suspension line and having an opening therethrough,
 - a tumble lever pivoted in said frame in said opening,
 - a hook on an end of said tumble lever for holding the loop of another suspension line,
 - a frame element coacting with said hook to retain said loop,
 - said tumble lever being swingable relatively to said frame opening so as to swing said hook away from said frame element thereby to release said loop and to permit insertion of said loop,

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said tumble lever having a pocket in the portion at the other end thereof,

a button movably held in said pocket,

coacting interlocking elements on said button and on said frame releasable by pressing said button inwardly of said pocket,

and resiliently yieldable means in said pocket normally to urge said button into said elements interlocking position,

a detent cap pivoted in said frame and extended over said other end of said tumble lever so as to prevent the swinging of said tumble lever relatively to said frame,

and resiliently yieldable means normally to urge said detent cap to said other end of said tumble lever, said button being accessible for pressing into said pocket when said detent cap is turned away from said other end of said tumble lever.

3. A canopy spiller comprising

- a frame adapted to be engaged by a suspension line and having an opening therethrough,
- a tumble lever pivoted in said frame in said opening,
- a hook on an end of said tumble lever for holding the loop of another suspension line,
- a frame element coacting with said hook to retain said loop,
- said tumble lever being swingable relatively to said frame opening so as to swing said hook away from said frame element thereby to release said loop and to permit insertion of said loop,
- said tumble lever having a pocket in the portion at the other end thereof,
- a button movably held in said pocket,
- a spring bearing against the bottom of said pocket and normally urging said button outwardly of said pocket,
- means to limit the outward movement of said button, interlocking elements on said frame and on said button to prevent swinging of said tumble lever, said spring holding said button in position for interlocking said elements, said elements being releasable by pressing said button into said pocket,
- said other end portion and said button projecting away from said frame opening so as to render said button accessible,
- and a detent cap resiliently pivoted in said frame and biased to be urged over said other end of said tumble lever and being engageable with said tumble lever for preventing swinging of said tumble lever.

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