March 15, 1938. S. SWITLIK 2,111,303

PARACHUTE DEVICE

Filed Jan. 17, 1935 2 Sheets-Sheet 1

Fig. 1

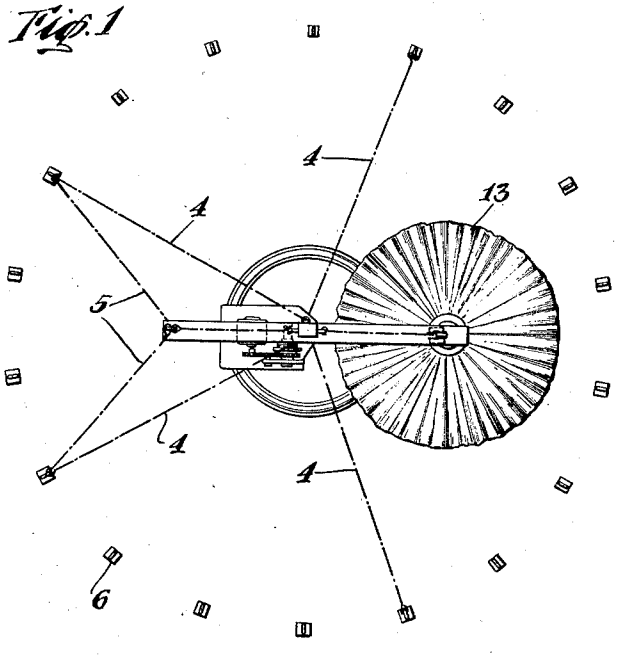


Fig. 4

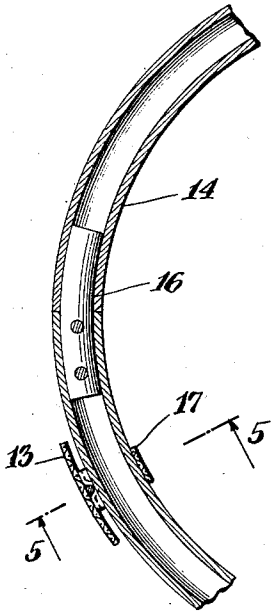


Fig. 2

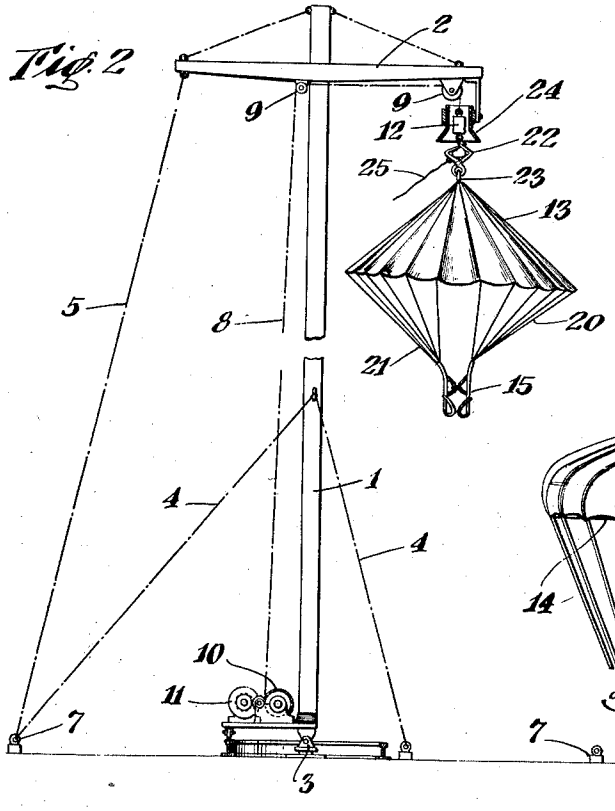


Fig. 5

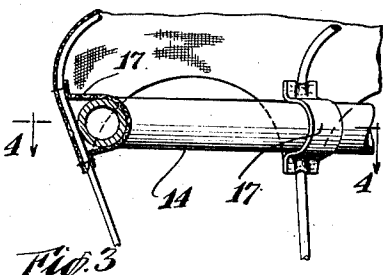
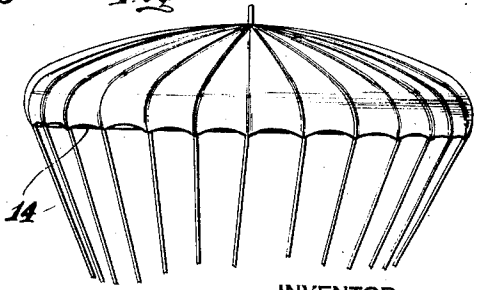


Fig. 3



INVENTOR
Stanley Switlik.
BY
Daniel L. Morris
ATTORNEY

March 15, 1938. S. SWITLIK 2,111,303

PARACHUTE DEVICE

Filed Jan. 17, 1935 2 Sheets-Sheet 2

Fig. 6

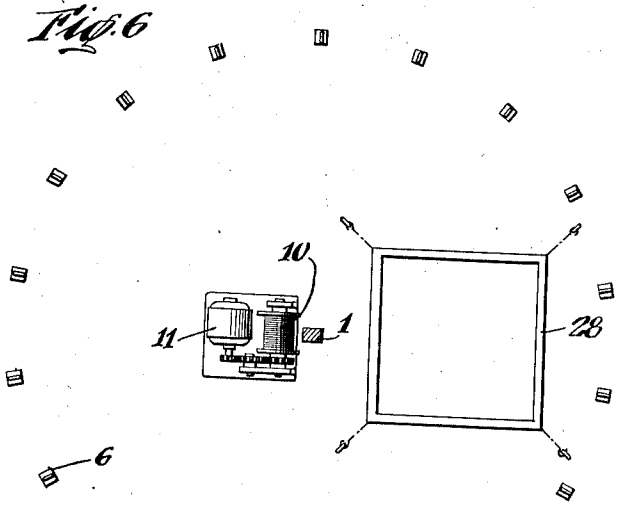


Fig. 9

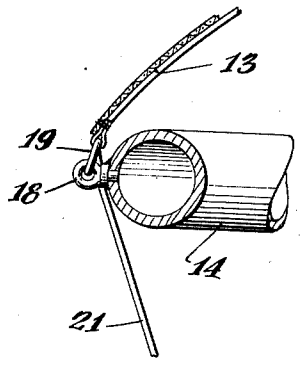


Fig. 7

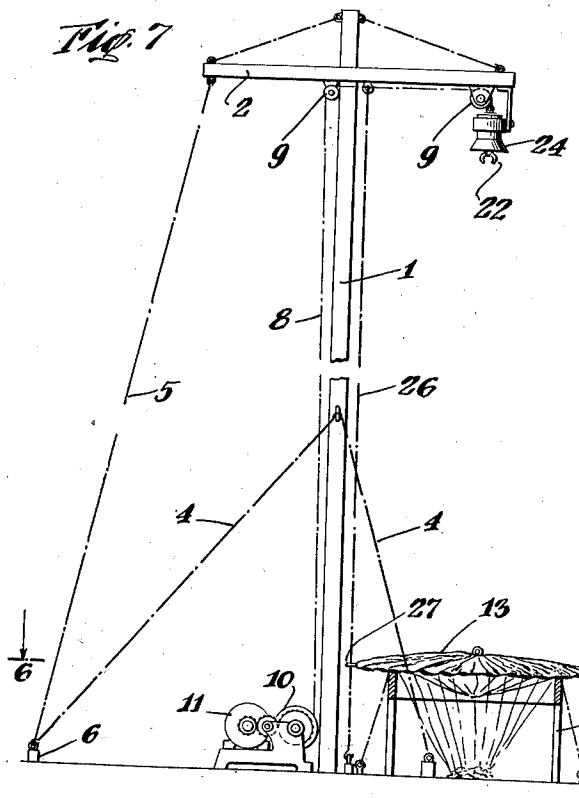
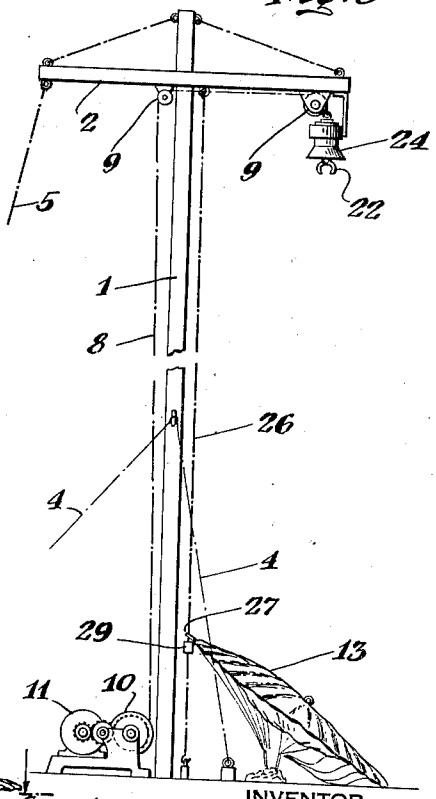


Fig. 8



INVENTOR

Stanley Switlik

BY

Daniel L. Morris

ATTORNEY

Patented Mar. 15, 1938 2,111,303

UNITED STATES PATENT OFFICE

2,111,303

PARACHUTE DEVICE

Stanley Switlik, Trenton, N. J., assignor to James Hale Strong, Trenton, N. J.

Application January 17, 1935, Serial No. 2,138

18 Claims. (Cl. 35—12)

This invention relates to a parachute device which is particularly adapted for use in the teaching of parachute jumping and also is admirably adapted for use as an amusement device.

The device consists, generally speaking, of a parachute canopy to which is attached a carrier such as a harness, by the ordinary shroud lines. A means for elevating the canopy and carrier, with a jumper therein, is provided. This assembly is elevated by a suitable means such as a hoist, balloon or the like until it reaches a predetermined height where it is released either automatically or manually thus permitting the jumper to drift to the ground supported by the canopy in simulation of a free jump.

The skirt of the canopy is held in an open condition at all times so that, when the canopy is released from the elevating means, it will inflate immediately upon the initiation of the downward movement and will thus produce the full effect of a free parachute jump with no danger of a too rapid descent.

The size of the parachute canopy is, of course, calculated with relation to the average load so that it will descend with the load at a predetermined and safe speed.

Provision is made so that as the parachute descends freely it will drift in a predetermined and controllable direction, in one form of the invention. In another form of the invention, however, the parachute is guided in its descent while falling free nevertheless.

In either form, when the canopy is released at the upper extent of its travel it descends in what is known in the art as a "free jump", that is to say the jumper is entirely supported by the canopy and the canopy is unsupported except by the resistance of the air.

It will thus be seen that the device may be used as a training device in the teaching of parachute jumping for the jumper will at all times be within hearing distance of the instructor and will be subjected to the descending conditions that are encountered in free jumps. Thus the jumper may become accustomed to jumping conditions before jumping from greater heights.

Moreover, as an amusement device it will afford all of the thrill of parachute jumping without any of the attendant dangers.

While I have illustrated certain forms of the invention I do not wish to be limited thereto except as is necessitated by the claims appended hereto.

In the drawings:

Figure 1 is a plain view of one form of the invention.

Figure 2 is a side elevation of the form shown in Figure 1.

Figure 3 is a detail showing the canopy open.

Figure 4 is a section on line 4—4 of Figure 5.

Figure 5 is a section on line 5—5 of Figure 4.

Figure 6 is a modified form of the invention shown in section on line 6—6 of Figure 7.

Figure 7 is a side elevation of the form shown in Figure 6.

Figure 8 is a side elevation of another form of the invention, and

Figure 9 is a fragmentary view of a modified means for holding the canopy on the ring that maintains the skirt of the canopy open.

Referring to the form of the invention disclosed in Figure 1, a mast 1 is provided with a boom 2 at the top thereof. The mast is mounted on a bearing 3 that permits the rotation of the mast around a vertical axis thus permitting the boom 2 to be swung to extend in any outward direction from the mast for a purpose that will later appear.

The mast and boom are supported by guy wires 4 and 5 that are attached to anchors 6 by suitable detachable fasteners at 7. It is to be noted that the anchors 6 are located in a circular path surrounding the mast so that when the mast and boom are to be rotated the guy wires may be detached from the anchors to which they are attached and reattached to the proper anchors corresponding with the movement of the mast and boom.

The purpose of this mast and boom is to support an elevating cable 8 that passes over suitable pulleys 9 and is adapted to be wound upon and unwound from a brake controlled winch 10 that is actuated by a suitable means such as an electric motor 11.

The free end of the cable 8 is provided, preferably, with a weight 12 so that, when the winch 10 is unbraked, the free end of the cable will automatically descend.

A parachute canopy 13 is provided which canopy is of the usual form. The skirt of this canopy is maintained open by suitable means such as a ring 14 and the canopy supports a carrier 15 for the jumper, which carrier may be of any desirable form but which I have shown in the form of a harness.

The ring 14 is made up of a plurality of sections that are detachably held together at 16 and the ring passes through tapes 17 on the

canopy so that the canopy is secured to the ring at a plurality of points.

As a matter of fact there is a tape 17 at each edge of each of the panels of the canopy so that each panel will be attached to the ring at each seam.

The ring 14 is made of a plurality of detachable sections so that it may be inserted through the tape loops 17 and so that it may be disassembled for the convenience in shipping.

In another form, shown in Figure 9, the ring is continuous and carries eyelets 18 to which the canopy 13 is attached by releasable fasteners, such as snap hooks 19.

I have found these two means of maintaining the skirt of the parachute open to be effective but it is, of course, obvious that other means may be used and for that reason I have claimed this feature broadly.

The diameter of the ring 14 is less than the diameter of the skirt of the parachute canopy and the panels of the canopy are attached to the ring 14 so that the distance between the attaching means, that is to say, the tape loops 17 or snap hooks 19, is less than the width of the panel of the canopy at its lower end. This allows the canopy to inflate in the usual manner.

The shroud lines that attach the carrier or harness 15 to the canopy are drawn together in two groups 20 and 21 and attached as groups to the carrier. In the form of the invention shown in Figures 1 and 2 the group 21 of shroud lines adjacent the mast 1 are longer than the group 20 remote from the mast. Thus when a jumper is in the carrier the ring 14 and the skirt of the canopy will be tilted upwardly adjacent the mast. This will permit the air to spill out of the canopy on the side adjacent the mast and will cause the canopy to drift, in its descent, away from the mast.

In order that the parachute assembly may be elevated and either automatically or manually released I have provided the free end of the cable 8 with a releasable fastener 22 which engages a ring, or other snitable means, 23 attached to the peak of the canopy and is adapted to be automatically released therefrom by a suitable releasing device 24. I have shown the releasable fastener and the releasing means conventionally as any well known mechanism may be used. The releasable fastener 22 is provided with an operating cord 25 so that, should the jumper desire, he may release the canopy at any point of its upward travel. Thus selectivity in this respect is provided for.

In operation, the mast 1 is first adjusted, if there is any wind, so that the boom 2 extends in the direction of but away from the wind, so that there will be a tendency of the parachute to drift away from the mast in its descent. The free end of the cable 8 is then permitted to lower and the parachute secured to the cable by means of the releasable fastener 22 and the ring 23. After the jumper has been placed in the carrier 15 and secured therein the winch 10 is actuated to raise the parachute assembly and the jumper when the parachute reaches the extent of its upward travel, which is only controlled by the distance of the boom from the ground, the releasable fastener 22 engages its releasing means 24 and is automatically disengaged from the ring 23, thus releasing the parachute. The parachute, at the initiation of its descent, completely inflates and the jumper drifts to the ground in the usual manner.

The spilling of the air from the canopy by reason of the tilting of the skirt of the parachute canopy augments the effect of the wind in causing the parachute to drift away from the mast, when there is a wind, and when there is no wind, causes such a drift.

Should the jumper desire, he may release the parachute from the elevating means at any point in his upward travel by releasing the fastener 22 by means of the cord 25 that may be brought within his reach.

In the form of the invention shown in Figure 7 a guide 26 that extends throughout the extent of travel of the parachute is provided. I have shown this guide in the form of a taut wire but it, of course, may take other forms. The ring 14 that holds the skirt of the parachute canopy open is provided with an eyelet 27 through which the guide 26 passes. This eyelet is freely slidable on the guide 26 so that the canopy is guided in its descent without in any way interfering with the free fall.

In this form the shroud lines may all be of the same lengths or they may be, as in the form shown in Figure 1, longer adjacent the mast than remote from the mast so that there will be a tendency of the canopy to pull away from the mast.

In this form shown in Figure 7 I have provided a support 28 on the ground directly in the path of descent of the canopy so that when the canopy reaches the support it will come to rest thereon, the ring 14 resting on the horizontal bed of the support.

In the form of the invention shown in Figure 8 the form of Figure 7 is modified to the extent that the support 28 is dispensed with and the guide 26 is provided with a stop 29 with which the eyelets 27 engage. Thus the canopy will come to rest in the position shown in Figure 8, sufficiently raised to permit the jumper to walk beneath the canopy.

Thus it will be seen that I have provided a parachute device in which a parachute canopy, the skirt of which is maintained open and which supports a jumper, is raised to a desired height and either automatically or manually released and in which the canopy with its load floats to the ground as a free jump.

I have illustrated the elevating means as including a mast and a boom on which operate an elevating cable but it is conceivable that other forms of elevating means may be used and I, therefore, have claimed this phase of the invention broadly.

It is here stated that under certain conditions it may be desirable to, in the form of the invention disclosed in Figure 1, make all of the shroud lines of equal lengths. My invention contemplates such a construction.

What I claim is:

1. A parachute device, including a tower, a cable extensible from said tower, a canopy releasably attached to the cable, a carrier attached to the canopy, means for retracting said cable to elevate the canopy and carrier, automatically operable means for releasing said canopy and carrier from said cable at a definite point in the upward travel of the canopy and carrier.

2. A parachute device including a tower, a boom extending from said tower, the boom being adjustable to extend outwardly from the tower in various directions, a cable extensible from the boom, a parachute canopy carried by said cable, a carrier attached to said canopy, means for re-

tracting said cable and means for releasing said canopy and carrier from said cable.

3. A parachute device including a tower, a boom extending from said tower, the boom being adjustable to extend outwardly from the tower in various directions, a cable extensible from the boom, a parachute canopy carried by said cable, a carrier attached to said canopy, means for retracting said cable and automatically operable means for releasing said canopy and carrier from said cable at a definite point in the upward travel of the canopy.

4. A parachute device including a tower, a boom extending from said tower, the boom being adjustable to extend outwardly from the tower in various directions, a cable extensible from the boom, a parachute canopy carried by said cable, a carrier attached to said canopy, means for retracting said cable and means for releasing said canopy and carrier from said cable and means for controlling the direction of drift of said canopy during its free descent.

5. A parachute device including a tower, a cable extensible from said tower, a parachute canopy releasably attached to the cable, means for maintaining the skirt of the canopy open, a carrier attached to the canopy, means for retracting said cable to elevate said canopy and carrier, automatically operable means for releasing said canopy from said cable at a definite point in the upward travel of the canopy.

6. A parachute device including a tower, a cable extensible from said tower, a parachute canopy releasably attached to the cable, a carrier attached to the canopy, means for retracting said cable to elevate the canopy and carrier, automatically operable means for releasing said canopy from said cable at a definite point in the upward travel of the canopy, and means for guiding the canopy in its free descent.

7. A parachute device including a parachute canopy, a carrier attached thereto, a ring for maintaining the skirt of the canopy open, means for elevating the canopy and carrier, means for releasing the canopy from the elevating means, means for guiding the canopy in its free descent, and means for arresting the canopy at a predetermined point in its descent, said means including a platform for supporting the ring.

8. A parachute device including a parachute canopy, a carrier attached thereto, a ring for maintaining the skirt of the canopy open, means for elevating the canopy and carrier, means for releasing the canopy from the elevating means, means including an eyelet on said ring and a vertical guide on which the eyelet freely slides, for guiding the canopy in its free descent.

9. A parachute device, including a tower, a cable extensible from said tower, a parachute canopy releasably attached to the cable, a carrier attached to the canopy, means for retracting said cable to elevate the canopy and carrier, automatically operable means for releasing said canopy from said cable at a definite point in the upward travel of the canopy, and means for guiding the canopy in its free descent, said cable and guiding means being adjustable to various points of the compass.

10. A parachute device, including a canopy, a carrier attached thereto, means for elevating the canopy and carrier with relation to the elevating means, means for releasing the canopy for a free descent, means for guiding said canopy in its descent, and means for arresting the canopy at a definite point in its descent.

11. A parachute device including a canopy, a carrier attached thereto, means supported by the ground for elevating the canopy and carrier, said means permitting the canopy to descend, and means for guiding the canopy in its descent, said last mentioned means including a guide extending downwardly from the upper point of travel of the canopy and a sliding connection between the canopy and said guide.

12. In a parachute device, a tower, a boom extending from the tower, a cable extending from the boom, means for retracting the cable, said means also permitting the extension of the cable, a parachute canopy attached peak first to the cable means for completely extending the skirt of the canopy, and a carrier attached to the canopy by shroud lines.

13. In a parachute device, a canopy, means attached to the peak of the canopy for elevating the canopy peak first, a ring attached to the skirt of the canopy to maintain the same horizontally extended and to prevent the edge of the skirt of the canopy from moving out of a substantially horizontal position during the elevation of the canopy.

14. A parachute device including a canopy, a carrier attached thereto, means for permanently extending the skirt of the canopy and means attached to the peak of the canopy to elevate the canopy and carrier and for completely extending the canopy vertically.

15. A parachute device including a canopy, means supported by the ground for elevating the canopy and releasable means for attaching the canopy to the elevating means.

16. A parachute device including a canopy, means for maintaining the skirt of the canopy permanently extended, means supported by the ground for elevating the canopy, and means for releasably attaching the canopy to the elevating means.

17. In a parachute device, a canopy and means for maintaining the skirt of the canopy completely extended at all times, means for elevating the canopy, said means also permitting it to descend, and means for maintaining the canopy captive during its descent.

18. In a parachute device, a parachute canopy, means attached to the peak of the canopy for elevating the canopy, and means for maintaining the skirt of the canopy extended, said first named means also preventing the vertical collapse of the canopy during its elevation.

STANLEY SWITLIK.