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C. K. SULGER
KITE FLYING APPARATUS

3,062,488

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2 Sheets-Sheet 1

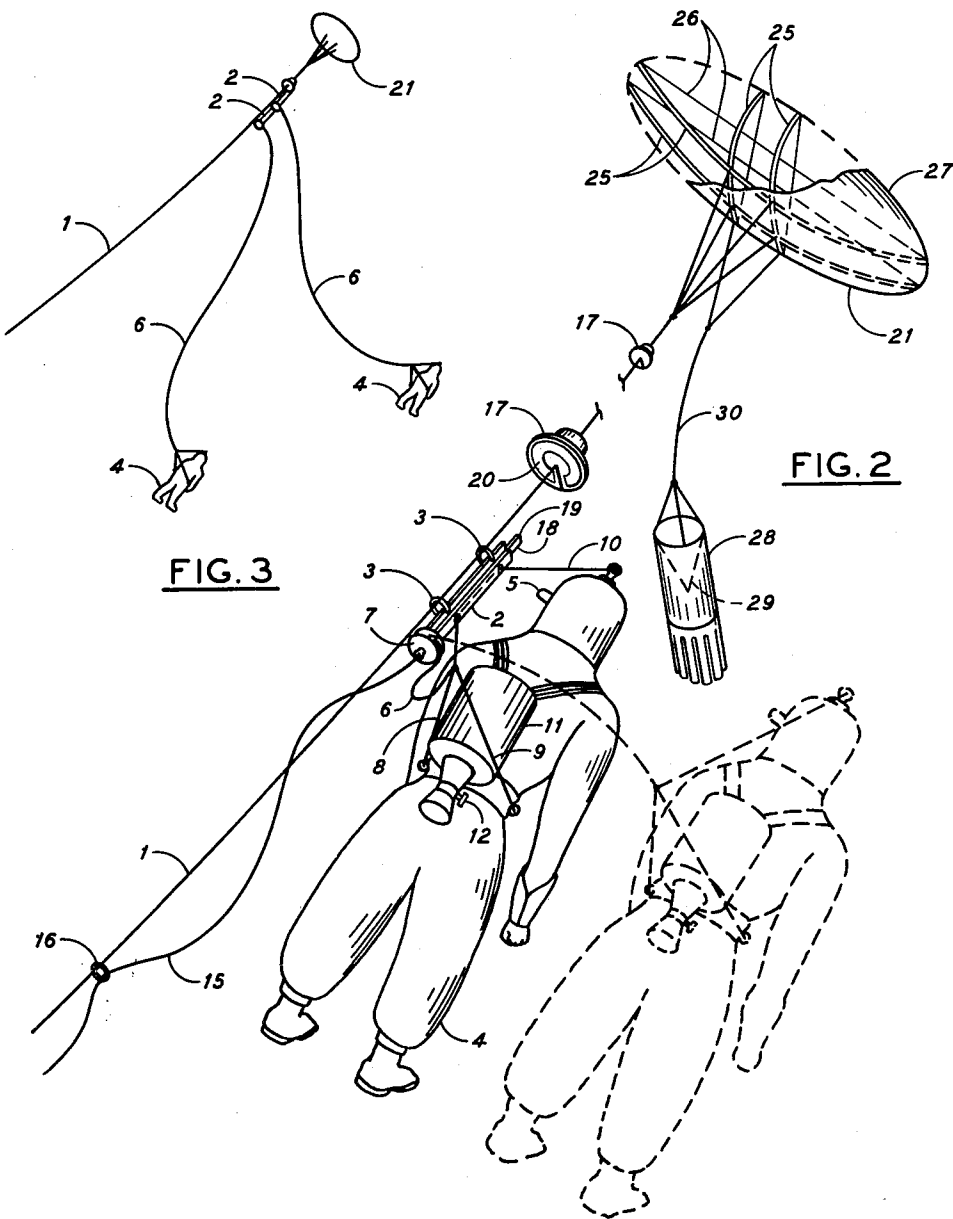


FIG. 1

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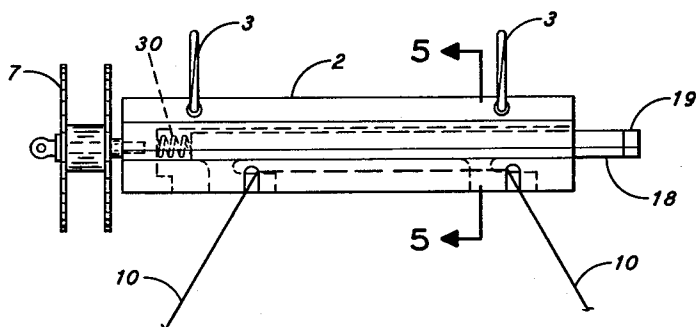


FIG. 4



FIG. 5

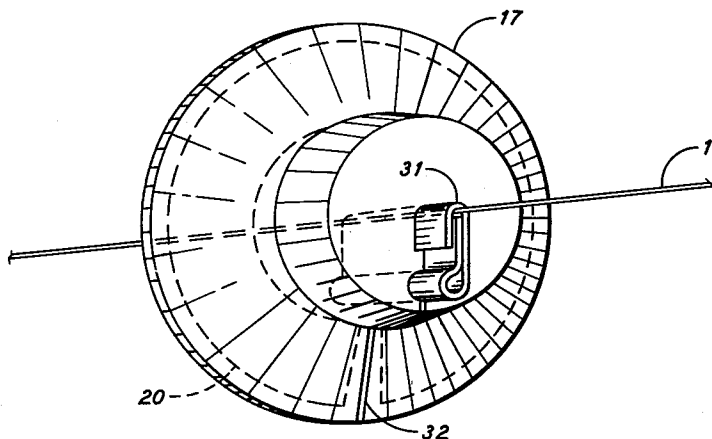


FIG. 6

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KITE FLYING APPARATUS

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16 Claims. (Cl. 244-155)

This invention relates to kite flying, more particularly to kite accessories and their combination with a kite, and still more particularly to devices which may be employed to slide upwardly along a kite line under the influence of wind currents and to carry to an upper portion of the kite line various types of loads to be placed in space within pre-determined distances from said upper portion.

Kite line travelling devices adapted to carry parachutes to an upper portion of a kite line and to release them so that they may fall to earth have been used heretofore. However, heretofore there has not been devised a means for carrying up a kite line and releasing into space such non-parachute type loads as simulated space men and for maintaining such objects in space at controlled distances from the release points. It is an object of the present invention to provide such means.

An object of the invention is to provide a device of the above character that will be propelled upwardly along the kite line under the influence of wind currents acting on the device itself and on the load carried thereby and that will permit the load to be released automatically at an upper portion of the kite line, to drift in the space surrounding said portion, without permitting said load to fall to the ground.

Another object of the invention is to provide a combination of a kite line travelling device and an inflatable load, for example, a load shaped to simulate a space man, operable to simulate space exploration.

In accordance with the present invention there is provided an apparatus for kite flying, comprising the combination of a body member, means for slidably attaching said body member to the kite line of a flying kite, means for releasably securing a load in a position close to said body member during the journey of said body member up said kite line, said last means being actuatable by contact with a stop device located at an upper portion of said kite line to release said load at said upper portion and permit said load to move away from said body member to a distance limited by a tethering line connecting said load and said body member, and means for securing one end of said tethering line to said body member.

In a more specific embodiment of the invention there is provided the combination of kite flying apparatus which comprises a kite, a kite line with which said kite may be flown from the ground, a kite line traveller slidably attachable to said kite line to permit said traveller to travel up said kite line while said kite is in flight from a first position near the ground to a second position at an upper portion of said kite line, a load adapted to be carried by said traveller up said kite line, release means for releasably securing said load near said traveller while said traveller travels from said first position to said second position, a tethering line adapted to have one end attached to said traveller and one end attached to said load and to be carried in a slack condition with said traveller and said load from said first position to said second position, and means operable at said second position for actuating said release means whereby said load may move away from said traveller to a distance limited by the length of said tethering line.

The novel features of the invention are set forth with particularity in the appended claims. The invention will best be understood, however, both as to organization and operation, and additional objects and advantages thereof will be apparent from the following description of specific

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embodiments when read in connection with the accompanying drawings in which:

FIG. 1 is a perspective view showing a kite line travelling device carrying an inflated load means upwardly along a kite line,

FIG. 2 is a perspective view of a kite, including kite tail,

FIG. 3 is a perspective view showing two inflated objects flying in space in a tethered condition from the upper portion of a kite line following their release from kite line travellers,

FIG. 4 is a longitudinal view of a kite line traveller, including load release means,

FIG. 5 is a sectional elevation view taken along the line 5-5 of FIG. 4, and

FIG. 6 is a perspective view of a kite line stop device adapted to terminate the upward travel of a kite line traveller.

Referring now to FIG. 1, there shown is a perspective view of a kite line travelling device carrying an inflated load upwardly along a kite line. The inflated load may be a simulated space man, as shown, or may be any other inflated object, preferably one that will serve to simulate various aspects of space travel and space exploration, for example, a rocket, missile, space platform, or space car.

Still referring to FIG. 1, the embodiment there shown is operated in the following manner. A kite, described hereinafter in connection with FIG. 2, at the end of kite line 1 is launched in the wind and permitted to ascend to a pre-determined height. Kite line traveller 2, hereinafter more fully described in connection with FIGS. 4 and 5, is attached to kite line 1 by means of split rings 3. An inflated load 4, which may be made of polyethylene, in this case a simulated space man inflated with air or a lighter-than-air gas through valve 5, is attached to kite line traveller 2 by means of flexible lengthy tethering line 6 wound on a reel 7 and having one end thereof secured to said reel 7 and the other end thereof secured to flexible lines 8, 9 and 10, as shown. Lines 6, 8 and 10 may be any suitable, lightweight flexible lines, made of material such as conventional twisted cotton cord or nylon. Line 10, in turn, is releasably attached to traveller 2 at two points as shown, and as more fully described hereinafter in connection with FIGS. 4 and 5, in a manner that will both: (a) provide stability for load 4 during travel of traveller 2 up kite line 1; and (b) prevent line 6 from unwinding from reel 7 until line 10 is released from kite line traveller 2.

With traveller 2 in place on kite line 1, and with load 4 attached to traveller 2 as described above, load 4 and traveller 2 are released into the wind to be propelled upwardly along kite line 1 by the action of the wind and/or any lighter-than-air gas with which load 4 may have been inflated, and/or by any other propelling means provided. If desired, container 11 may comprise a supply of a gas, which may be air, separated from the inflating gas for load 4, under pressure and releasable in a controlled manner from container 11 by opening valve 12, to provide additional thrust for propelling load 4 up line 1. In such case container 11 may be constructed of polyethylene or other suitable material sufficiently rigid to retain its form without inflating, and the propelling gas supply may be contained in an inflatable bag of polyethylene or rubber located within container 11. A line 15, attached to traveller 2 as shown, and further attached to a plurality of rings 16 disposed on line 1 as shown, may be provided for the purpose of withdrawing traveller 2 together with attached load 4 down line 1 without the necessity for bringing in line 1, if desired.

A stop device 17, which otherwise may be called an impact device or detonating device, is attached to line 1

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at a pre-determined upper portion of line 1 where it is desired to have traveller 2 stop and to have load 4 be released to reel out into space at the end of tethering line 6. When traveller 2, in its upward travel, impinges upon stop device 17, the resulting impact actuates release member 18 of traveller 2 as described in connection with FIG. 4, to release line 10. Upon this occurrence load 4, under the action of wind currents, floats away from traveller 2, reeling out into space, as shown in the drawing by the dotted position of load 4, at the end of tethering line 6 as tethering line 6 unwinds from reel 7.

It has been found that even if load 4 has been inflated only with air and not with a lighter-than-air gas, it is readily propelled up line 1 under the influence of wind currents and, upon impact of release member 18 against stop device 17, automatically reels out into space with an extremely realistic effect when viewed from the ground, simulating space exploration from a space platform. As discussed below, more than one inflated load 4 may be used to achieve further space effects, including the effect of space exploration by a team of space men.

From the foregoing description it will be apparent that numerous other modes of operation of the present invention may be used, including the use of a plurality of loads 4 on one traveller 2, and the use of a plurality of travellers 2 together with their associated inflated loads. For example, a plurality of inflated space men releasably attached to the same or different travellers may be released into space at the ends of tethering lines. Where two inflated loads such as inflated space men are to be carried by separate travellers and each is to be released at the end of a tethering line, a first traveller 2 may be caused to release its load by impinging upon stop device 17, and a following traveller may be caused to release its load by impinging upon the first stopped traveller. In this situation there will be no interfering contact between the two loads at the release points, because the first load will have been released by the time the second load arrives at its release point.

In a particularly interesting mode of operation of the present invention an extremely realistic simulated space exploration effect may be obtained by an arrangement wherein a first space man is sent aloft to the space platform, to await there the arrival of a second space man, who then takes up a station at the space platform and releases the first space man for space exploration duties. In this mode of operation an inflated space man 4, releasably attached to a kite line traveller 2 is sent up kite line 1, and thereafter a second inflated space man 4 is sent up kite line 1 on a travelling device that is not actuable to release its load, for example a travelling device similar to traveller 2 except having no release means, reel 7 or tethering line 8. In this mode of operation, in order to prevent the first space man from being released on his tethering line before the second space man arrives at the space platform to take up his position there, the traveller 2 associated with the first space man may be exactly reversed on kite line 1 from the position shown in FIG. 1, so that release member 18 will not be actuated when traveller 2 reaches stop device 17, but will be actuated by being impinged upon from below by the travelling device associated with the second space man. In this mode of operation it will be desirable to use a release member 18 that extends out further from the body of the first traveller than does the release member 18 shown in FIG. 1, or to use a second traveller having a body member extending well ahead of the point of attachment of its load, in order to prevent interfering contact between the two separate loads during operation.

While traveller 2, particularly when it is of an extremely lightweight construction, will remain in contact with stop device 17 under the action of wind currents acting on traveller 2 and on load 4, unless traveller 2 is withdrawn by means of line 15, it may be desired to provide additional means for insuring that traveller 2 will

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remain in contact with stop device 17 for so long as may be desired. Such additional means may be, for example, magnetic means such as a small magnet 19 secured to the end of traveller 18 and operable in conjunction with a small piece of metal 20 secured to stop device 17.

Referring now to FIG. 2 there shown is a kite 21 of a preferred type for use in connection with the present invention. Bowed cross-members 25 may be maintained in a bowed condition by means of taut strings 26. These cross-members may be covered with a lightweight sheet material 27, which may be heavy rice paper or preferably polyethylene. Covering material 27 may be secured to the ends of cross-members 25 by any suitable means; where polyethylene is used it has been found that it may be quickly, securely and satisfactorily attached to the ends of cross-members 25 by rubber bands. Kite 21 may have a tail 28, which desirably is shaped as shown to simulate such a space accessory as an atomic power supply for the associated space platform-kite. Tail 28 may be constructed of a suitable lightweight material such as polyethylene and may include a functional inverted cone 29 through which wind currents may funnel. Tail 28 may be attached to kite 21 by any suitable flexible line 30.

Kite 21 preferably will be so shaped as to have an appearance consistent with real space objects such as space platforms and flying saucers. It will be understood that it is within the scope of the present invention to use, in lieu of a kite such as the one shown, an inflated kite, a balloon, or space-age kites such as those shown in United States Patents 2,903,207 and 2,934,295. All such kites, inflated kites and balloons are intended to be embraced by the term "kite" whenever the same is used herein.

Referring now to FIG. 3 there shown is an embodiment of the present invention wherein two inflated simulated space men 4 are shown reeling out into space at the ends of tethering lines 6, to achieve a very striking simulated space exploration effect when viewed from the ground.

Referring now to FIG. 4 there shown is a longitudinal view of a suitable kite line traveller 2 for use in connection with the present invention, including rings 3 for attaching the traveller to a kite line, release member 18, member 18, magnet 19, a reel 7, and line 10, all discussed heretofore in connection with FIG. 1. Kite line traveller 2 and its associated release member 18 and reel 7 may be constructed of any suitable lightweight material; it has been found that a lightweight plastic material may be readily stamped, moulded and pressed to the desired configurations and is eminently satisfactory. In the embodiment shown, impact of release member 18 against the kite line stop device, forces release member 18 back against the opposing action of spring 30 to release line 10 from its points of attachment to traveller 2.

Referring now to FIG. 5 there shown is a sectional elevation view taken along the line 5-5 of FIG. 4 showing release member 18 slidably located at the body portion of traveller 2.

Referring now to FIG. 6 there shown is an embodiment of a stop device 17 which may be used in connection with the present invention. In the embodiment shown the stop device 17 may be moulded from a material such as plastic. It may be attached to line 1 by slipping a portion of line 1, as shown, into a clip 31, which may be a metal or plastic clip, and then by slipping a different portion of line 1 into the longitudinal center of stop device 17 through slot 32 and then by sliding stop device 17 and clip 31 together in a press fit obtainable by having the inner end of slot 32 shaped in a configuration to correspond with the shape of clip 31.

From the foregoing it may be seen that the present invention operates in a novel and effective manner to simulate various forms of space exploration with striking effect that is both visually pleasing and educational. It

will be appreciated that various changes in the modes of construction and operation of the present invention that have been described and illustrated may be made without departing from the spirit of the invention, and all such changes are intended to be included within the scope of the appended claims. For example, the reeled tethering line 6 referred to herein may be an antenna for a small radio transmitter carried aloft and unreeled into space at an upper portion of kite line 1 under the influence of a load 4. Such a transmitter could be actuated from the ground through pulls on an operating line, such as line 15, to transmit code messages to a radio receiver located on the ground.

What is claimed is:

1. Apparatus for kite flying, comprising the combination of a body member, means for slidably attaching said body member to the kite line of a flying kite, means for releasably securing a load in a position close to said body member during the journey of said body member up said kite line, said last means being actuatable by contact with a stop device located at an upper portion of said kite line to release said load at said upper portion and permit said load to move away from said body member, a tethering line for connecting said load and said body member, and means for securing one end of said tethering line to said body member.

2. Apparatus as in claim 1, with the additional element of reel means for maintaining said tethering line in a wound condition until said load is released at said upper portion.

3. Apparatus as in claim 2, wherein said reel means is mounted on one of the elements of the combination of said body member and said load.

4. The combination of kite flying apparatus which comprises a kite, a kite line with which said kite may be flown from the ground, a kite line traveller slidably attachable to said kite line to permit said traveller to travel up said kite line while said kite is in flight from a first position near the ground to a second position at an upper portion of said kite line, a load adapted to be carried by said traveller up said kite line, release means for releasably securing said load near said traveller while said traveller travels from said first position to said second position, a tethering line adapted to have one end attached to said traveller and one end attached to said load and to be carried in a slack condition with said traveller and said load from said first position to said second position, and means operable at said second position for actuating said release means whereby said load may move away from said traveller to a distance limited by the length of said tethering line.

5. The combination as in claim 4, with the addition of means for returning said traveller and the load tethered thereto down said kite line to the ground while said kite remains in flight.

6. The combination as in claim 4, with the addition of means for maintaining said traveller at said second position both before and after said load is released.

7. The combination as in claim 6, wherein said last-named means comprises at least one magnet.

8. The combination of kite flying apparatus which comprises a kite, a kite line with which said kite may be flown from the ground, a kite line traveller slidably attachable to said kite line to permit said traveller to travel up said kite line while said kite is in flight from

a first position near the ground to a second position at an upper portion of said kite line, an inflatable load adapted to be carried by said traveller up said kite line, release means on said traveller for releasably securing said load near said traveller while said traveller travels from said first position to said second position, a tethering line adapted to have one end attached to said traveller and one end attached to said load, reel means mounted on one element of the combination of said traveller and said load for winding said tethering line thereon and carrying said tethering line in a wound condition with said traveller and said load from said first position to said second position and means operable at said second position for actuating said release means whereby said tethering line may unwind from said reel as said load moves away from said traveller to a distance limited by the length of said tethering line between said load and said traveller.

9. The combination as in claim 8, wherein said means for actuating said release means comprises a stop secured to said kite string at said second position.

10. The combination as in claim 8, wherein said means for actuating said release means comprises a second kite line traveller.

11. The combination as in claim 8, with the addition of means for returning said traveller and the load tethered thereto down said kite line while said kite remains in flight.

12. In a kite flying combination comprising a kite, a kite line for flying said kite from the ground, and a kite line traveller adapted to carry a load up said kite line while said kite is in flight, the improvement which comprises inflatable load means for carrying said traveller up said kite line to an upper portion thereof, means operable at said upper portion for releasing said load means from said traveller, and a tethering line having one end attached to said traveller and one end attached to said load means.

13. The combination as in claim 12, wherein reel means are mounted on one of the elements of the combination of said traveller and said load means, for maintaining said tethering line in a wound condition until said load is released at said upper portion.

14. The combination as in claim 13, wherein said reel means are mounted on said traveller.

15. The combination of an inflatable, simulated space object, a kite line traveller, means for holding said space object in a position near said traveller during travel of said traveller up a kite line, a tethering line having one end secured to said traveller and the other end secured to said space object, and means for releasing said space object at an upper portion of said kite line from said position whereby said space object may move away from said traveller to a distance limited by the length of said tethering line.

16. The combination of claim 15, wherein said object is an inflatable simulated space man.

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