

[54] **EMERGENCY EVACUATION MEANS FOR SKI CHAIRLIFTS**

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[58] Field of Search.....182/73, 72, 74, 75, 129, 7, 182/3; 105/329 S, 329 SC; 297/217

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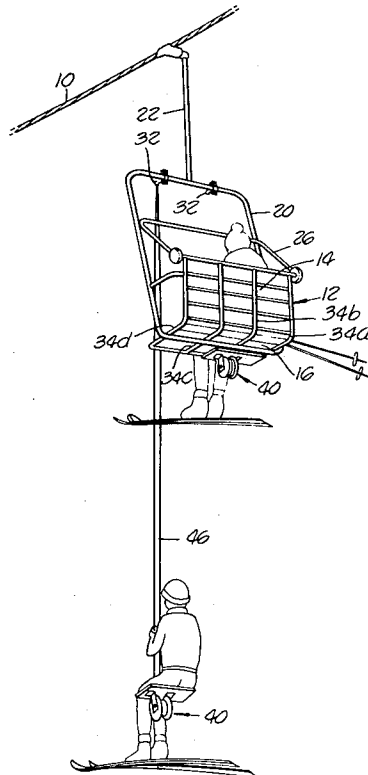
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[57] **ABSTRACT**

An emergency means or system for evacuating or lowering persons from stalled ski chairlifts. A small, separable platform is attachable to the chair frame. It carries a reel of cable, one end of which is attached to the platform and the other end to the reel. The cable can be looped over a hook on the chair; the platform can be separated or detached, and then a person can lower himself while sitting on the platform which has a braking device associated with the cable whereby the person can control the rate of descent. The reel includes a spring drive for automatically returning the platform to the chair and rewinding the cable on the reel.

10 Claims, 8 Drawing Figures



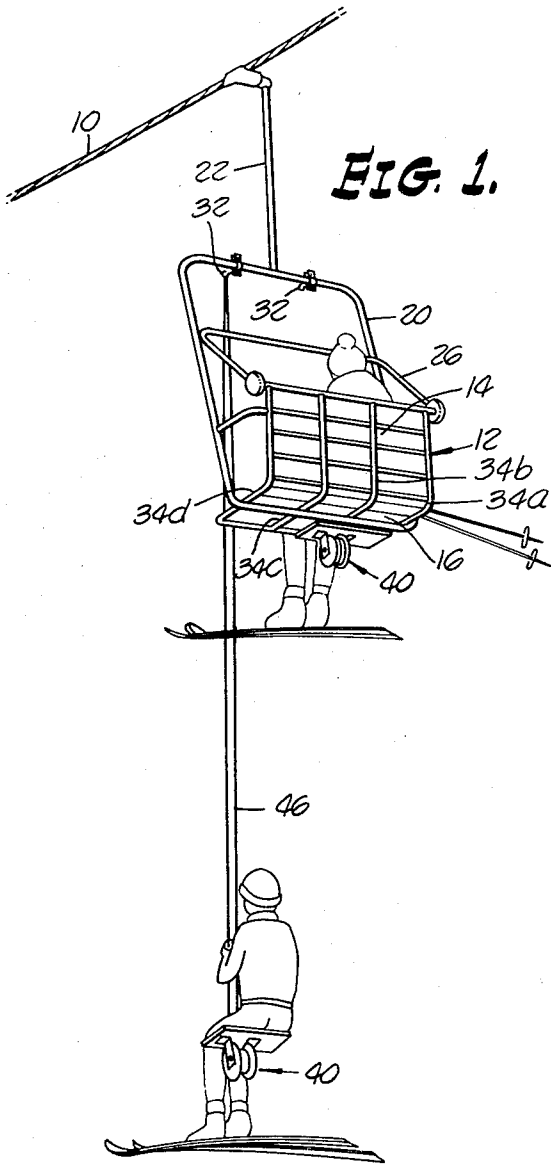


FIG. 1.

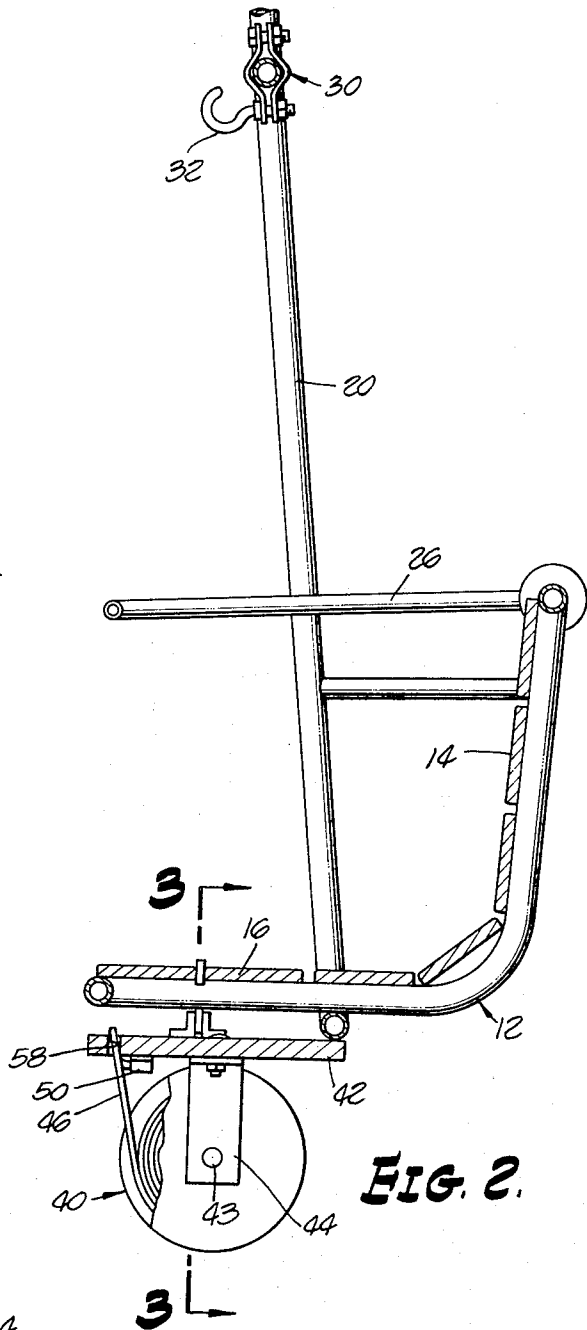


FIG. 2.

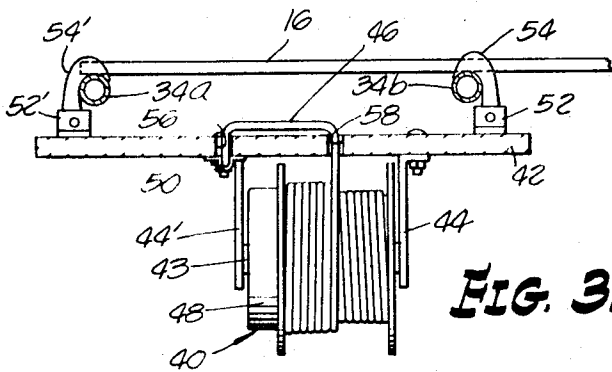
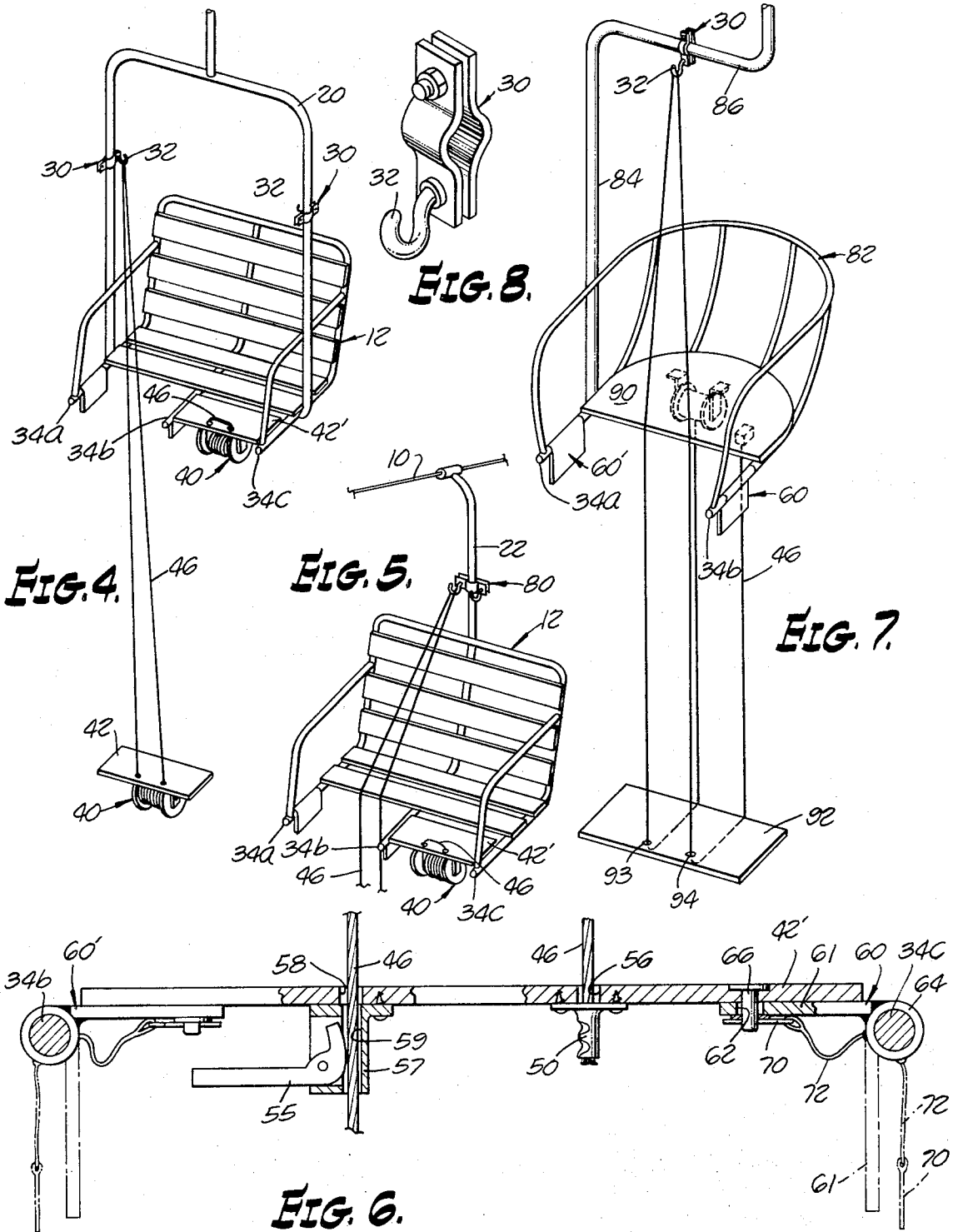


FIG. 3.

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EMERGENCY EVACUATION MEANS FOR SKI CHAIRLIFTS

SUMMARY OF THE INVENTION

The invention relates to means for evacuating or rescuing persons from stalled ski chairlift systems.

BACKGROUND OF THE INVENTION

The frequent stoppages of ski chairlift systems caused by electrical power failures or mechanical defects result in unpleasant and sometimes dangerous minutes or hours of exposure to the most adverse weather conditions, very low temperatures, icy winds, and blizzards. The awareness of being helplessly stranded, sometimes as high as 100 feet or more, above the ground and not being able to do much about it adds to the anxiety and fear. The restoration of electric power or correction of the mechanical defect usually brings the chairlift operation back to normal. However, if all efforts fail to put the system back in motion, rescue crews attempt to throw ropes over the carrier cable to the stranded skiers and assist them in sliding down the ropes. Such an operation requires a certain amount of strength and agility which not all skiers possess, especially women and children. The worst situation results when the rescue crews are not able to evacuate the skiers in reasonable time who then have a choice of either to impair seriously their health or even life by staying exposed to adverse weather for many hours or sustain injuries jumping down. Neither choice is an attractive solution.

The herein invention provides means in the form of an appliance that is readily attachable to or usable with existing ski chairlifts to provide for each and safe evacuation or rescue from stalled chairs.

In preferred exemplary forms of the invention described in detail herein, a supply of cable is provided on a reel and the reel is attached or attachable to the chair, preferably, a small platform is provided which normally attaches to the chair frame but is separable therefrom when utilizing the evacuation means. Preferably, a bight of the cable is pulled from the reel and looped or hooked over a hook provided for that purpose on some point of the chair frame. The platform can then be lowered by way of the cable, the platform forming a seat for the rescued person while descending. Preferably, also, a device or means are provided whereby the person can manually control the rate of descent as described in detail hereinafter.

In the light of the foregoing, the primary object of the invention is to make available a simplified, safe, economical and easy to use device or appliance adapted for evacuation or rescue of personnel from stalled ski chairlifts.

Another object is to provide such a device embodying cable means on a reel and a platform attachable to the chair with means for attaching a loop of cable to the chair and then lowering of the platform under control of the person.

A further object is to provide a device of this type embodying specific advantageous means for attaching a platform to the chair and releasing it therefrom and for controlling the rate of descent.

BRIEF DESCRIPTION OF THE DRAWINGS

Further objects and additional advantages of the invention will become apparent from the following detailed description and annexed drawings, wherein:

FIG. 1 is a perspective view of a preferred form of the invention in use;

FIG. 2 is an elevational view of the ski chairlift with the appliance of the invention attached thereto;

FIG. 3 is a sectional view taken along the line 3—3 of FIG. 2;

FIG. 4 is a perspective view similar to that of FIG. 1 of a modified form of the invention;

FIG. 5 is a perspective view of the form of the invention of FIG. 4 with a slight modification;

FIG. 6 is a detailed sectional view of supporting platform of the forms of the invention shown in FIGS. 4 and 5;

FIG. 7 is a perspective view of another modified form of the invention; and

FIG. 8 is a detail view of a bracket having a hook that is attachable to frame parts of the chair.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1, 2, and 3 show one form of the invention. A typical ski chairlift is shown. The lift cable is shown at 10 and the chair is shown generally at 12. The chair has a back part 14, a seat part 16, and is supported by a column or stem 22 secured to the cable 10. The chair typically may be of tubular construction. Numeral 26 designates a U-shaped, pivoted safety guard member or rail which is movable into position in front of the occupants to assist in preventing them from falling out of the chair. Numeral 30 designates a clamping bracket formed of two parts attached together by bolts as shown and from which a hook 32 extends for purposes which will be explained presently.

The chair 12 includes tubular members having parts extending fore and aft under the seat designated at 34a, b, c, and d in the figures. The evacuation or rescue appliance is shown in detail in FIGS. 2 and 3.

A small drum or reel 40 made of lightweight metal or rugged durable plastics is mounted under each chairlift seat by means of a crossbar or platform 42 as shown. The crossbar or platform 42 and the drum 40 are permanently and firmly rigidly joined. Drum 40 has a center shaft 43 supported by brackets 44 and 44'. Flexible cable 46 is wound on the drum. The drum has a torsion drive spring in it and an automatic friction brake as designated at 48 to control release of cable.

Preferably the cable 46 is covered with a plastic sleeve or it may be a nylon rope of length sufficient to reach the ground from any point along the chairlift route. One end of the cable is connected permanently to the bottom side of the crossbar 42 by bracket 50 and the other is permanently connected to the axle of the drum or some other point inside of the drum. Attached to the ends of the crossbar or platform 42 are brackets 52 and 52' having pivoted hooks 54 and 54' which hook over frame members as shown at 32a and 34b in FIG. 3.

In case of emergency, the skier pulls on the cable 46 emerging from the drum and passing through two holes 56 and 58 in the crossbar 42 under the seat and pulls it up between his legs. This releases a few feet of the cable from the inside of the drum overcoming a certain limited amount of resistance. These few feet of cable are enough to reach hook 32 mounted on the main support frame as shown in FIG. 1 and to loop the bight over the hook. Now the cable is in front of the skier running from the drum, between his knees up through hole 58 in the crossbar 42 to the hook 32 and down through hole 56 in the crossbar to which it is permanently fastened on the bottom side of the crossbar. The crossbar together with the drum is now unhooked from the seat by unhooking hooks 54 and 54' and the skier holding the cable in front transfers his weight onto the crossbar 42. By holding to the cable, the skier safely reaches the ground. The descent speed (length of cable released by the drum per unit time) is reduced by half because of the cable running up to the hook 32 and down from the hook 32 to the crossbar. The automatic brake serves to limit drum rotation and rate of descent.

Once the crossbar 42 and the drum 40 are free of the skier's weight after reaching the ground, the spring mechanism in the drum which is wound up during the descent starts turning and winds the cable on the drum 40. Thus, this brings the emergency evacuation device (drum, crossbar, and cable) back to the chair. After all skiers have been evacuated, the cables can be taken off the hooks and the device returned to the position of FIG. 3. This operation takes place at either lower or upper terminals after the system failure has been corrected.

A small handle can be provided on the drum which when pressed by the skier before he starts his descent, clamps the cable between two rubber strips preventing the cable release, thus stopping the descent. Small relaxation of the pressure allows start of the rope release. In this way, a mechanical brake

is provided for controlling the speed of descent. This feature is an optional one in the system; such brake may be like that of FIG. 6 embodying handle 55 pivoted to bracket 57 having vertical channel 59 for cable 46 and handle 55 having a part frictionally engageable with the cable.

It is very significant that absolutely no modifications are required on the presently existing chairlifts to install the herein described system.

A second version or modification of the chairlift emergency evacuation system is shown in FIG. 4, 5, and 6, similar reference characters being used to identify similar parts. The crossbar 42' forms part of the chair seat and is lowered down to the ground with the skier sitting on it. The crossbar 42' provides a removable front edge part of the seat and is mounted as will be described. The drum 40 together with the cable is rigidly and permanently fastened under the platform 42'. Again the circular sides of the drum are in a vertical position. The cable emerging from the drum penetrates upward through the hole 58 in the crossbar 42 and back downward through hole 56 in the crossbar 42' and is permanently fastened at clamp 50. The holes in the crossbar 42' are separated by a few inches. The crossbar 42' is supported by hinged support holders 60 and 60'. Holder 60 comprises part 61 having hole or aperture 62 and integral sleeve or tube 64 fitted over member 34c to form a hinge. Pin 66 extends down from crossbar 42' through hole 62. It has a diametrical hole to receive safety pin 70 on lanyard 72. Holder 60' is of like construction. As it is apparent, crossbar 42' is readily separable from seat 12.

In case of an emergency, the cable stretched on the crossbar 42' between the two holes is pulled from the drum until it can reach the hook 32 on the main support frame, FIG. 4. After opening, the holders 60 and 60' holding the crossbar 42' in place, the skier eases himself into the crossbar 42' holding on to the cables in front, (FIG. 1). He can control his descent speed by handle 55.

FIG. 5 shows a slightly modified form of the invention having a double bracket 80 mounted on the support standard 22, having two hooks as shown, each of which accommodates one of the cables associated with one of the two appliances with which the chair is equipped as shown.

FIG. 7 shows the third modified form of the invention which is shown utilized with that type of chair adapted to accommodate a single occupant. A chair is designated at 82 supported by an upright 84 having a horizontal portion 86. The seat of the chair is designated at 90. A drum or reel carrying the cable is like that of the previous embodiment, but in the present embodiment, it is rigidly attached to the underside of the seat 90 of the chair. The chair has frame members 34a, and 34b like that of the previous embodiment and it is equipped with holders 60 and 60' like those shown in FIG. 6 which are adapted to support a crossbar or platform as designated at 92 which normally forms the front part of the seat. In this form of the invention, the cable is arranged as shown in FIG. 7. The crossbar or platform 92 has two holes 93 and 94. One end of the cable 46 is fastened underneath the seat 90 and the other end if fastened to the drum 40 as in the previous embodiments. Thus, two reaches of lengths of cable 46 extend from the drum 40 to the platform 92 and two lengths extend upwardly and are hooked over the hook 32 when the appliance is in use.

The descent speed of the skier is half as high as in the previous two versions since there are four parallel reaches of cable because of the cable arrangement. Also additional amounts of friction are present here because of the cable sliding through

the two holes in the crossbar. Twice as long a cable is required as in the previous versions and the drums have to be correspondingly larger. The spring mechanism in the drum, which is wound up during the descent, pulls the crossbar up to the chair once the skier safely reaches the ground and gets off the crossbar. It can be placed again in the proper position ready for the next use, at the upper or lower terminal, when the chairlift is back in operation. The crossbar does not have to constitute the front edge of the seat, but can be secured under the seat parallel to the front edge of the seat together with the drum.

The holders fastening the crossbar to the seat can be mounted permanently to the chair or the crossbar and can be adjustable in length so that any chair width can be fitted with the same crossbar length.

The herein evacuation system can also be adapted to use in buildings and used in cases where normal exit facilities are blocked.

From the foregoing, those skilled in the art will readily understand the nature and construction of the invention, its utilization, and the manner in which it achieves and realizes the objects and advantages set forth in the foregoing, as well as additional advantages that are apparent from the detailed description.

The foregoing disclosure is representative of preferred forms of the invention and is to be interpreted in an illustrative rather than a limiting sense, the invention to be accorded the full scope of the claims appended hereto.

What is claimed is:

1. An article of manufacture, an appliance adapted for use with a ski chairlift comprising in combination: means including a supply of flexible cable means adapted to be carried by the chair; means for attaching at least a part of the cable means to the chair, and means whereby a person may be controllably lowered from the chair by way of the cable means.

2. An article as in claim 1, including separable means forming part of the appliance adapted to be lowered from the chair and provided with mechanism whereby a person being lowered can control relative movement to control the rate of descent.

3. An article as in claim 2, wherein the supply of cable is carried by the means lowered from the chair, the cable being attached to the chair in a manner such that two lengths of cable extend from the chair to the said separable means.

4. An appliance as in claim 1, wherein said supply of cable means comprises a reel having cable wound thereon.

5. An article as in claim 4, wherein said reel includes driving means for driving the reel whereby to wind cable thereon.

6. An appliance as in claim 2, including a platform member supportable by the chair and separable therefrom, the cable having attachment to the platform for lowering it to carry a person to the ground.

7. An appliance as in claim 6, wherein the supply of cable is carried by the platform member.

8. An appliance as in claim 2, wherein the appliance includes means adapted to be lowered with the person for applying braking effect for controlled rate of descent.

9. An appliance as in claim 6, wherein said platform member is normally positioned to form a part of the chair seat and is separable therefrom to be lowered with the person.

10. An appliance as in claim 1, wherein the supply of cable is permanently attached to the chair and feeds out therefrom during lowering.

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