May 2, 1961 G. W. JENKINS, JR., ET AL 2,982,229

SKI TOW

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Fig. 1

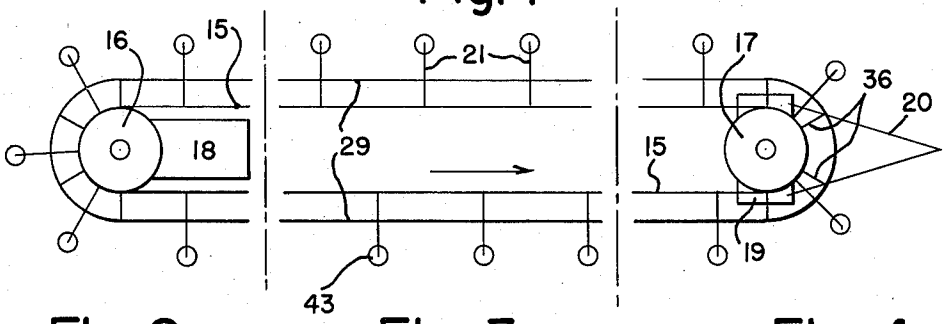
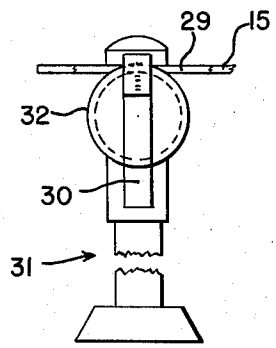
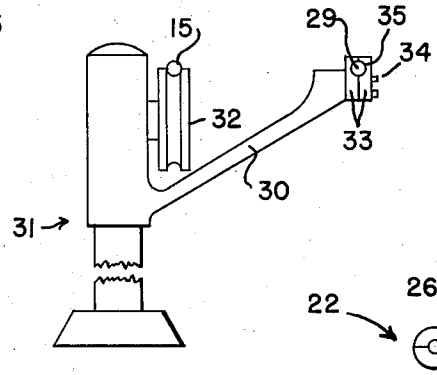


Fig. 2 Fig. 3 Fig. 4





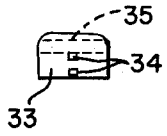


Fig. 5

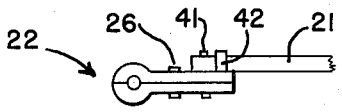


Fig. 6

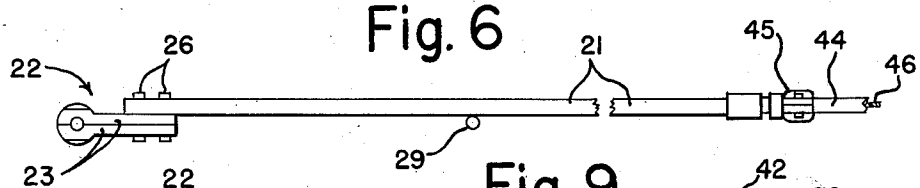


Fig. 9

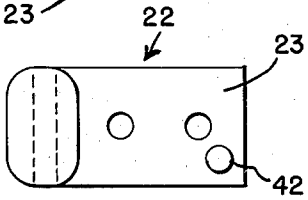
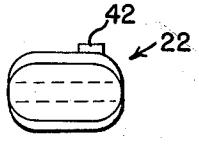


Fig. 7



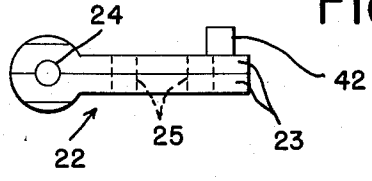


Fig. 8

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Fig. 10

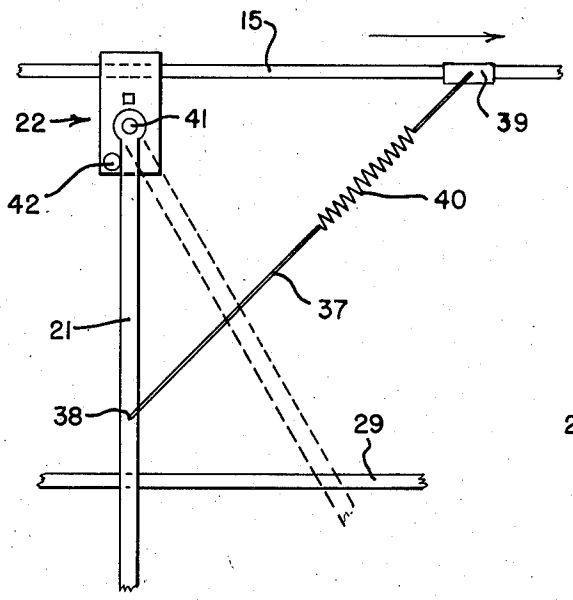


Fig. 11

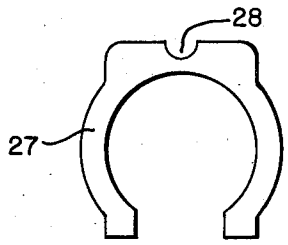
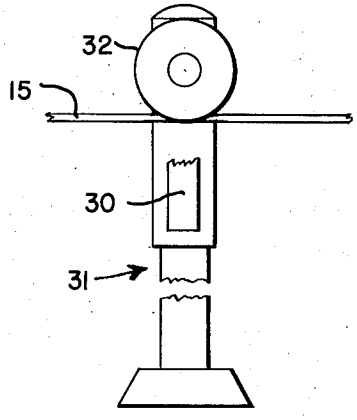


Fig. 12



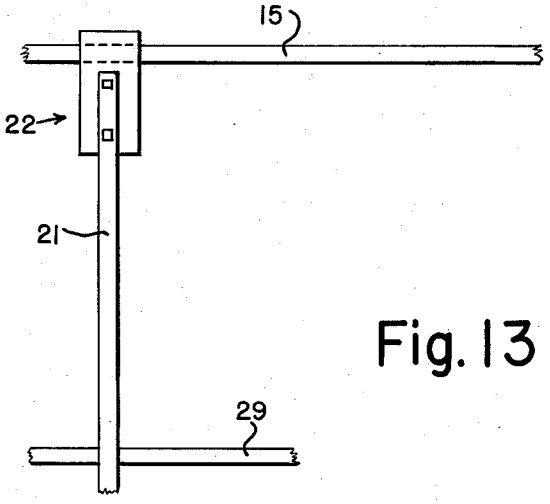


Fig. 13

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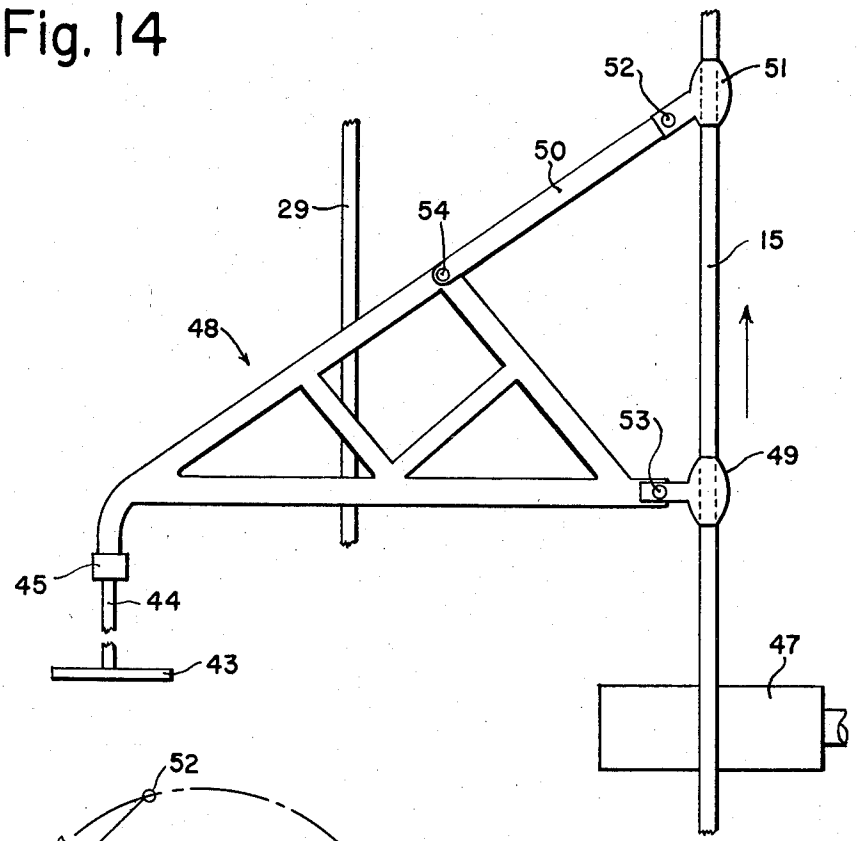
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Fig. 14



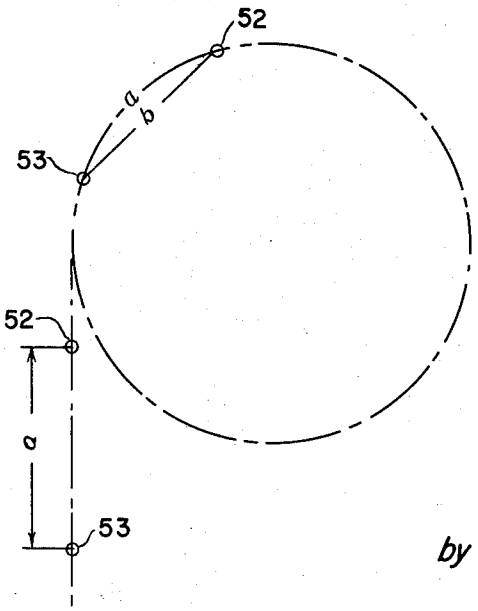


Fig. 15

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United States Patent Office 2,982,229 Patented May 2, 1961

2,982,229

SKI TOW

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Filed June 23, 1958, Ser. No. 744,314

3 Claims. (Cl. 104—173)

The present invention relates to ski tows, and has for its principal object to improve the safety of such tows by bringing the towing cable out of a vertical line with the skiers and preferably nearer the ground. A towing cable is heavy, and when located as usual directly above the heads of the skiers has caused death or serious injury when it breaks or comes off the driving pulleys. A further object is to simplify and thus decrease the cost of a tow as compared with the constructions now available. A further object is to provide a ski tow which can be loaded from the side, not in the line of any moving parts, and which can be unloaded at any point in the lift line.

In accordance with the present invention the towing cable carries a series of laterally projecting arms riding over a stationary support, preferably a cable spaced from and parallel to the towing cable. These arms carry, at a distance beyond the stationary cable, any desired form of skier support such as platters, connected to the arms by flexible cables or tubes. In its preferred form, the tow is made of the type in which the skiers are pulled along while still on their skiis on the snow, but may also be utilized in a chair lift.

This application is a continuation in part of our application Ser. No. 637,521, filed January 31, 1957, now abandoned in favor of the present application.

The invention will now be described with reference to the accompanying drawings, in which:

Fig. 1 is a diagrammatic plan of a ski tow embodying the invention;

Fig. 2 is a side elevation of a support for the cables;

Fig. 3 is a view looking from the left in Fig. 2;

Fig. 4 is a detail looking from the right in Fig. 3;

Fig. 5 is a detail of a supporting rod with one form of clamp for holding it to the tow cable;

Fig. 6 is a similar view showing at the left a form of clamp used when the device is used as a chair lift or slow tow, and at the right a connection to the platters used when the device is employed as a tow;

Fig. 7 is a top view of the form of a clamp shown in Fig. 5;

Fig. 8 is a side view thereof;

Fig. 9 is a view thereof looking from the left in Fig. 7;

Fig. 10 is a plan view of one form of mounting of the supporting rod when used on a ski tow;

Fig. 11 is a detail of a preferred form of pulley;

Fig. 12 is a view similar to Fig. 2 showing the form of support used to hold the tow cable near the ground when passing over a low area;

Fig. 13 is a view similar to Fig. 10 showing a mounting for the supporting rod when used with a chair lift;

Fig. 14 is a plan view of a preferred form of supporting arm; and

Fig. 15 is a diagram showing the length between pivot points in the arm of Fig. 14 when passing around the tow cable supporting pulleys.

The tow cable 15 passes around two pulleys 16 and 17, the former of which is connected in the usual way to a power plant 18, and the latter of which is mounted

on the usual sliding base 19 which is connected by cables 20 with any desired tightening device. details of the driving and tightening device are not a part of the present invention, and are therefore not illustrated. At intervals along the towing cable 15 arms 21 are mounted by means of clamps 22. Each clamp is formed preferably of two mating members 23 having semi-cylindrical grooves 24 to fit the cable and holes 25 through which bolts 26 pass to fasten the arms 21 in place and to tighten the members 23 upon the cable 15. The ends of the clamps surrounding the cable 15 are preferably made roughly ellipsoidal in form so that they will pass freely over the pulleys. To further facilitate the passage of the clamps around the pulleys the latter are preferably made in the form of pneumatic tires 27 (Fig. 11) having a central peripheral groove 28 to receive the cable 15 and the clamps.

The stationary support 29, which may be in the form of rails or pipes, but is preferably a cable, is carried on arms 30 which extend laterally from telescoping posts 31 upon which are also mounted pulleys 32 over which the towing cable 15 runs. These pulleys are located either above (Fig. 12) or below (Fig. 2) the cable 15 depending upon the character of the terrain. For short runs on even terrain the pulleys may be made with a peripheral groove as in Fig. 3, but where the terrain requires a considerable distance between supports, and particularly where the cable is elevated well above the skiers, these grooved pulleys 32 are preferably replaced by cylindrical pulleys of the type used for belt conveyors and shown at 47 in Fig. 14. These are long enough so that they will support the tow cable irrespective of any lateral movement which will be encountered in practice and avoid any danger of the cable jumping groove.

To support the stationary cable 29 a pair of clamp plates 33 are bolted at 34 to each arm 30, the plates having mating semi-cylindrical grooves 35 to enclose the cable 29 and being rounded off on their upper edges so as to offer the least possible resistance to the passage over them of the arms 21. Adjacent the pulleys 16 and 17 the stationary cable 29 is similarly supported by a series of angled struts 36. To give support to the arms 21 they are preferably connected to the cable 15 by rods or cables 37 attached to the arms 21 at 38 and to the cable 15 by clamps 39 at a point forwardly of the arms. These rods 37 serve to pull the arms 21 forwardly; and, to protect them against shock and to permit easy passage around the driving pulleys particularly when the device is used as a tow, are preferably made with an inserted spring 40. In this case the arms 21 are pivoted to the clamps 22 at 41 (Figs. 5 and 7–10), and in operation are held against a stop 42 by the drag of the skier. The spring evens out the initial jerk on starting where the tow is operated at high speed. Since chair lifts and some tows operate at a lower speed, when used for this purpose the springs may be omitted and the arms 21 bolted solidly to the clamps 22 (Fig. 6).

The connection (not shown in its entirety) between the ends of the arms 21 and the platters 43 (Fig. 1) is preferably flexible, and in the case shown is made of hydraulic tubing 44 (Fig. 6) connected to the ends of the arms by couplings 45. A flexible rod or spring 46 is preferably inserted in the tubing on the clamp end so as to avoid too sharp bending.

In Fig. 14 is shown the preferred form of arm which extends from the tow cable 15 across the stationary cable 29. This comprises a truss-like portion 48 connected to the tow cable directly by a clamp 49, and through a link 50 by a clamp 51. Between the link 50 and the clamp 51 is a pivot 52, and between the truss 48 and clamp 49 is a pivot 53. The link 50 is pivoted to the truss 48 at

54. This three point pivotal suspension permits the parts to move relative to each other when going around the driving pulleys, acting in this respect in the same way as the spring 40, the latter not being necessary as a shock preventer when the tow is operated at ordinary speeds. This relative movement is necessary since the distance *b* between the pivots 52 and 53 when going around a curve is less than the distance *a* between them when the tow cable is straight, as illustrated in Fig. 15. This provides a very rigid construction of the truss arm, and also gives this arm a two point bearing on the supporting cable 29 as shown in Fig. 14.

It will be noted that the leading side of the truss, which includes the link 50, is slanted rearwardly over the supporting cable 29. The purpose of this construction is to give a slanting push, rather than a direct one, to a skier who happens to get in the way of one of the arms. He will thus be pushed out of the way without injury. A further safety feature is that a platter 43 can be guided, either by a skier or by a simple barrier, away from the arms and cables so that a skier does not have to get into the path of the arms until he has a positive grasp of one of the platters 43, or its connecting member 44. The same applies when a skier wishes to disengage himself from the tow.

What we claim is:

1. A ski tow comprising an endless tow cable, means for supporting and driving the tow cable in a path substantially parallel to the ground, a supporting member vertically spaced above the ground and laterally and outwardly spaced from the tow cable leaving the upper surface of the supporting member substantially unobstructed, arms secured to the tow cable and extending over the supporting member to slide thereon, said arms having their leading edges inclined rearwardly so as to deflect to one side a skier accidentally getting in front of them, and skier carrying devices attached to the arms on that side of the supporting member remote from the tow cable.

2. A ski tow comprising an endless tow cable, means for supporting and driving the tow cable in a path substantially parallel to the ground, a flexible support cable, standards holding the support cable in a fixed position vertically spaced from the ground and laterally and outwardly spaced from the tow cable leaving the upper surface of the support cable substantially unobstructed, arms secured to the tow cable and extending over the support cable to slide thereon, skier carrying devices fixed to the arms on that side of the support cable remote from the tow cable, and diagonally positioned pulling members attached to the arms and to the tow cable forwardly of the arms.

3. A ski tow as claimed in claim 2 in which said pulling members include a spring permitting yielding movement of the pulling member relative to the tow cable and said arms.

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