March 3, 1964 W. T. ANTCLIFF 3,123,373

FLEXIBLE SKI-SLED

Filed Sept. 27, 1961

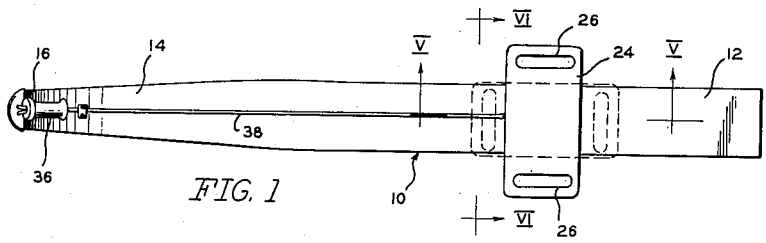


FIG. 1

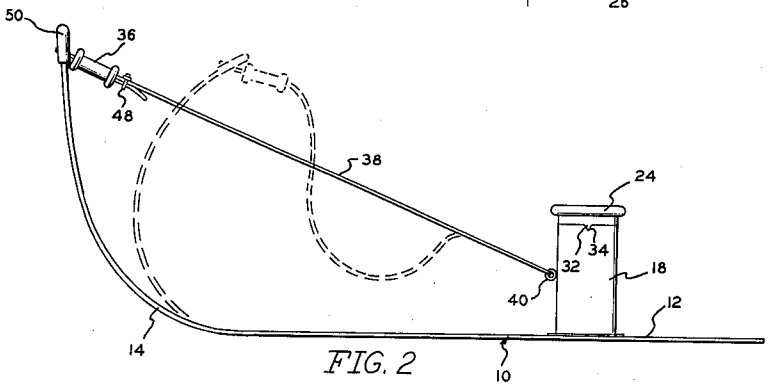


FIG. 2

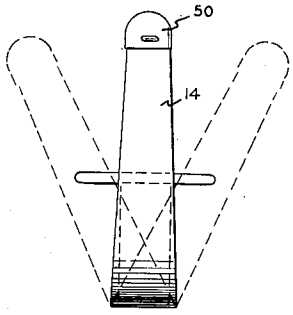


FIG. 3

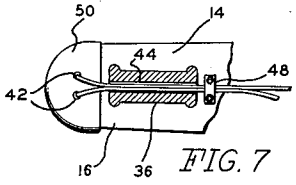


FIG. 7

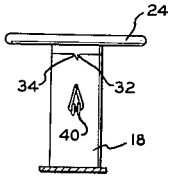


FIG. 6

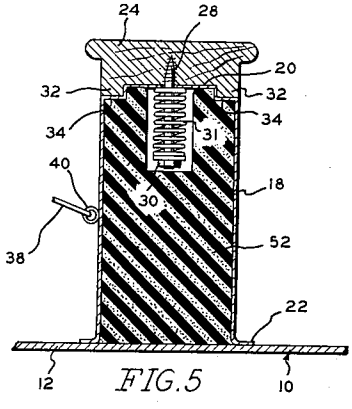


FIG. 5

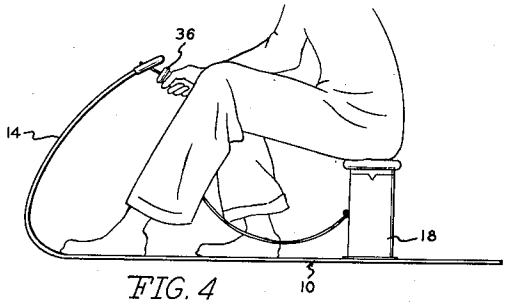


FIG. 4

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FLEXIBLE SKI-SLED

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This invention relates to a novel ski-sled having a flexible steerable ski runner.

The primary object of the invention is the provision of a more controllable maneuverable and more efficient ski-sled for down-hill coasting, on snow or ice, or for use as towed behind a power boat for water skiing, which affords the user greater opportunity for the exercise of skill and hence greater pleasure in its use.

Another object of the invention is the provision of a ski-sled of the character indicated above, which has a single ski-type runner, the runner being flexible and resilient and being adapted to be flexed laterally, for steering, and vertically, at its forward end, for varying the surface tension and contact area between the runner and the snow so as to control the speed of the ski-sled.

A further object of the invention is the provision of a ski-sled of the character indicated above, which is simple in construction, is composed of a small number of uncomplicated and easily assembled parts, and can be made in well-finished and rugged forms, at relatively low cost.

A further object of the invention is to provide a ski-sled which is usable both on land and water, which is provided with flotation means for water use and includes a seat which may be positioned between operating and storage positions.

Other important objects and advantageous features of the invention will be apparent from the following description and the accompanying drawings, where, for purposes of illustration only, a specific form of the invention is set forth in detail.

In the drawings:

FIG. 1 is a top plan view of a ski-sled of the present invention, showing the seat thereof in normal operating position in full lines, and in the storage or transporting position in dotted lines,

FIG. 2 is a side elevation of said ski-sled, showing its runner in normal position in full lines, and in the upwardly flexed position in dotted lines,

FIG. 3 is a front end elevation of said ski-sled, showing the runner in normal position in full lines, and in flexed positions in dotted lines,

FIG. 4 is an elevational view of the ski-sled wherein the rider has shifted his weight forward to increase the supporting contact area of the runner,

FIG. 5 is an enlarged sectional side elevation of the seat structure taken along line V—V of FIG. 1, and showing the flotation filler and seat positioning means,

FIG. 6 is a front elevational view of the seat taken along line VI—VI of FIG. 1, and

FIG. 7 is an enlarged sectional detail view of the steering handle and upper cable end.

Referring in detail to the drawings, wherein like numerals designate like parts throughout the several views, the illustrated ski-sled comprises a longitudinally and horizontally elongated runner **10**, in the form of a flat, thin, and narrow flexible metal plate or blade, having a straight and normally flat rear portion **12**, and an upwardly curved forward portion **14**, the runner having a slight and uniform taper from the arcuate tip **16** of its forward end portion **14** to the junction of the forward and rear portions.

The seat assembly includes a preferably square cross section tubular seat post **18** affixed to and rising perpendicularly from the rear portion **12** of the runner at a location nearer to the rear end of the runner than to its

forward portion **14**. The post **18** may be of formed sheet material and is of a configuration having an upper surface portion **20** and an outwardly extending lower flange **22**. The flange **22** is affixed to the runner by bolts, rivets or the like.

A seat **24**, which may be of wood, is mounted upon the surface **20** of the post **18** and is provided with hand hold slots **26**. A bolt **28** is fixed in seat **24** and extends downwardly through a hole in surface **20**. A nut **30** threaded to the end of the bolt **28** permits a compression spring **31** interposed between the nut and portion **20** to bias the seat downwardly whereby V projections **32** on the seat will be held in engagement with the V recesses **34** defined in the surface portion **20** to lock the position of the seat on the post **18**. The recesses **34** are related to the projections **32** such that the seat will be locked in either the operative full line position of FIG. 1 or the storage or transporting position shown in dotted lines. The seat is positioned by turning the seat with a force sufficient to cause the projections to ride up out of the recesses against the action of spring **31**.

Steering and control of the ski-sled are accomplished by the flexing of the forward portion **14** of the runner. The runner is of such flexible nature that by means of a handle **36** associated with the tip **16** of the runner by means later described, the runner forward portion may be flexed in both the vertical and lateral directions. Also, the runner flexibility permits the supporting contact area of the runner to be varied whereby a reduction of the area may be produced to increase the coasting speed by reducing surface friction, or the effective supporting contact area of the runner may be increased when coasting over soft snow by the rider redistributing his feet and weight on the runner as in FIG. 4.

The runner **10** is maintained in the bowed full line position of FIG. 2 by means of a cord or cable **38** anchored to the seat post **18** by an open curl ring **40** and attached to the tip **16**. The upper end of the cable **38** is inserted through the bore **44** of the handle **36**, threaded through the holes **42** and again passed through the handle bore and clamped by the conventional cable clamp **48**. This arrangement will keep the handle disposed adjacent the tip **16** and transmit the control forces imposed on the handle to the tip and runner. The effective length of the cable may be easily adjusted by loosening the clamp **48** and sliding the cable in a known manner.

Preferably a plastic guard **50** is inserted over the tip **16** and this guard is provided with holes aligning with holes **42** whereby the cable will serve to maintain the guard on the runner.

In usual operation, the seat **24** will be in the full line position of FIG. 1 and the rider will sit upon the seat placing the feet in heel to toe relation upon the runner; the heel of the rear foot will touch, or approximately touch, the post **18**. The handle **36** is grasped and the runner tip is pulled toward the rider to the dotted line position of FIG. 2. Thus, the handle will be in the vicinity of the rider's knees and readily movable to the right or left and up and down. Lateral flexing of the forward portion **14**, FIG. 3, by the handle will permit positive steering as a selected side edge of the runner bites into the snow or ice while the other edge will be elevated or "banked".

By pulling the handle further toward the rider to lift more of the runner from the supporting surface, the supporting area and friction may be reduced to increase the ski-sled speed. If soft snow is encountered, the area may be increased by lowering the handle and shifting the feet to the position shown in FIG. 4. If desired, the handle may be released and the operator will grasp the slots **26** to maintain balance.

It will be appreciated that the flexibility of the runner will permit an unusually high degree of control for devices of this nature and the type of ride produced will be largely determined by the skill of the rider.

For using the ski-sled in the water, a tow ring will be attached to the underside of the portion **14** at the arcuate bow and the operator will exercise control in the manner set forth above. For water use the interior of the post **18** will be filled with flotation means **52** such as styrofoam.

Although there has been shown and described a preferred form of the invention, it is to be understood that the invention is not necessarily confined thereto, and that any change or changes in the structure of and in the relative arrangements of components thereof are contemplated as being within the scope of the invention as defined by the claims appended hereto.

What is claimed is:

1. A steerable ski-sled comprising an elongated runner having a main support portion and an upwardly curved forward end portion terminating in a tip, said forward end portion being flexible and resilient, a flexible cord having a forward end secured to said forward end portion adjacent to said tip and extending rearwardly along the runner, a seat assembly fixed upon and rising from said main portion, said cord being stretched between said forward end portion and said seat assembly, and a handle mounted on said cord adjacent said tip, said seat assembly comprising an upstanding post, and a transversely elongated seat mounted on the upper end of the post and rotatably positionable thereon.

2. A steerable ski-sled capable of a high degree of maneuverability comprising, in combination, a thin, flexible broad blade runner having a rear portion and a forward portion capable of lateral flexing relative to said rear portion terminating in a tip, an upwardly extending seat mounted upon said rear portion, and a handle associated with said tip whereby said tip and forward runner portion may be raised relative to said rear portion, and lateral flexing of said tip and forward portion twists said forward portion relative to said rear portion.

3. In a steerable ski-sled as in claim 2, wherein a tension member is affixed at one end to said tip and affixed at the other end relative to said runner blade rear portion maintaining said tip and forward portion bowed upwardly relative to said runner rear portion.

4. A steerable ski-sled capable of a high degree of maneuverability comprising, in combination, a thin, flexible, broad blade runner having a rear portion and a forward portion capable of lateral flexing relative to said rear portion terminating in a tip, an upwardly extending seat mounted upon said rear portion, a flexible tension member affixed at one end to said tip and affixed at the other end to said seat maintaining said tip and forward portion bowed upwardly relative to said runner rear portion, and a handle mounted on said tension member adjacent said runner tip whereby said tip and forward portion may be flexed relative to said rear portion, lateral flexing of said tip and forward portion twisting said forward portion relative to said rear portion.

5. In a steerable ski-sled as in claim 4, wherein said seat includes a receptacle member and flotation means within said receptacle member.

6. A steerable ski-sled capable of a high degree of maneuverability comprising, in combination, a thin, flexible, broad blade runner having a rear portion and a forward portion capable of being twisted relative to said rear portion, a tip defined on said forward portion, a seat mounted upon said rear portion, a tension member affixed at one end to said tip and attached at the other end to said seat maintaining said runner forward portion bowed upwardly relative to said rear portion, and a handle associated with said tip whereby said tip and forward portion may be laterally deflected to flex and twist said runner forward portion relative to said runner rear portion.

7. In a steerable ski-sled as in claim 6, wherein said runner is of a normally planar configuration.

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