TOBOGGAN STEERING MECHANISM

May 4, 1954
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2,677,551

Filed June 5, 1951.

FIG. 6.

FIG. 7.

FIG. 8.

FIG. 9.

FIG. 10.

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This invention relates to steering apparatus for sliding devices in the nature of a toboggan, and is particularly directed toward novel steering means for a knock-down type of toboggan.

In my prior Patent No. 2,654,016, issued March 3, 1954, I disclosed a sectionalized toboggan in which the several sections were designed to collectively fit into the leading or headboard section for ready packing or storage. The present invention constitutes an improvement over my prior patent in that means are provided, in combination with a sectionalized toboggan, for steering the toboggan while coasting down a snow covered slope so as to eliminate the need for the rider, who may be seriously incapacitated, of having to dig his feet into the snow on one or the other side of the toboggan, or requiring the rescue party to forcibly urge the toboggan in a desired direction.

Another object or feature of the invention is to provide a sectionalized toboggan in which a skilful person guiding the same may readily and conveniently control the course of the toboggan while maintaining his normal skiing position.

A further object of this invention is to provide a toboggan of the type described, which may be selectively steered, from positions adjacent the head or rear end thereof, or, which may be alternately steered from such positions without requiring any changes or modifications of parts.

A still further object of my invention is to provide a toboggan as above described in which stabilizing means are provided for preventing yawing of the toboggan in descending a slope, and in which such means may be selectively placed into and out of snow-engaging position.

Yet another object of the invention is to provide a toboggan of the character described which is provided with suitable hand grips for engagement by the persons guiding the toboggan, and which are arranged immediately adjacent the manual steering control means whereby the persons may at all times even when steering the toboggan, possess a firm grip on the toboggan; the hand grips further providing means whereby the toboggan and its occupant may be readily raised from the surface of the ground.

A further object of the invention is to provide a toboggan of the type described in which the various sections and other equipment may all be stacked within the headboard section for convenient packing.

Another object of the invention is to provide a toboggan possessing the above features of advantage which may be rapidly assembled and dis-assembled by a person wearing heavy gloves and possessing no special mechanical training or skill.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

Referring to the drawings:

Figure 1 is a perspective view of the toboggan of my invention.

Figure 2 is a side sectional view of the steering rudder taken on the line 2--2 of Figure 1.

Figure 3 is a cross-sectional view taken in the planes indicated by the line 3--3 of Figure 2.

Figure 4 is a perspective view of the trailing edge of one of the sections disclosing the male portion of the interlock mechanism for the sections.

Fig. 5 is a perspective view of the leading edge of one of the sections showing the female portion of the interlock mechanism.

Figure 6 is an enlarged elevational view, partly in section, of the rear hand grips.

Figure 7 is a view similar to Figure 6, but indicating a modified form of rear hand grip.

Figure 8 is a view similar to Figure 6, but illustrating a further embodiment of the rear hand grip.

Figure 9 is a cross-sectional view taken in the plane indicated by the line 9--9 of Figure 8.

Figure 10 is a cross-sectional view taken along the line 10--10 of Figure 9.

Figure 11 is a cross-sectional view taken along the line 11--11 of Figure 1 showing the stabilizer in inoperative position.

Figure 12 is a view similar to Figure 11 but showing the stabilizer in snow engaging position.

Figure 13 is a sectional plan view taken along the line 13--13 of Figure 12 showing the action of the retaining spring and dowel on the leading edge of the stabilizer.

The toboggan body is preferably constructed as illustrated in Figure 1, and includes a headboard section 16, a plurality of generally similar intermediate sections 17 and 18, and a rear or end section 19, and although four sections are illustrated the toboggan may be constructed of less or more sections depending upon the overall length required and the size of the toboggan when in its knocked down condition. As will be under-
stood, the several sections are designed to be interconnected so as to form a unitary tobog-

gan structure, and when not in use, to be sepa-

rated and stacked in a relatively compact bundle

for convenient carrying by a single person. In

connection with this feature, the intermediate

and end sections 17, 18 and 19 may be uniformly

and progressively convergently tapered toward

the front of the toboggan, and when desired, each sec-

tion may be made progressively smaller from

front to rear to permit the aforesaid stacking in

the headboard section. A recess is provided in

the headboard 16 for accommodation of the other

sections by constructing the same with a sub-

stantially flat bottom portion 21, whose lower

surface 22 forms part of the tread surface of the

toboggan, rising in a coextensively upwardly

curved portion 23 forming the bow of the tobog-

gan. Side members 24, counted to conform

with the cross-sectional shape of the portions

21 and 22, are secured to the latter to preserve

the form and relationship of the portions and to

provide in the headboard a recess for the purpose

above set forth.

The means for securing the respective sections

together to provide a unitary toboggan struc-

ture may take a variety of different forms, such

as that disclosed in my aforesaid patent. How-

ever, for simplicity of construction, ease of as-

sembly, and insurance of a positive joint, I pre-

fer to utilize the connectors shown in Figures 4

and 5 of the drawing. Such connectors include

a male member 26 disposed at each side and ad-

jacent the rear edge of all but the section 19 and

complementary female members 27 longi-

tudinally aligned with the members 26 but placed

adjacent the leading edge of all but the head-

board section 16. Member 26 comprises a plate

28 secured by screws or the like to the upper

surface of its respective section and one or more

vertically extending threaded studs 29 secured

thereto. When the adjacent section is placed

in its overlapped assembled position, the studs 29

register with and are adapted to be received by

longitudinally extending slots 31 formed in the

said adjacent section and in a plate member 32

secured to the section. The slots 31 are radially

enlarged at 33 to permit passage there-through of

knocked down into a compact bundle for carry-

ing the same to the side of the injured party,

the conventional types of rescue work could not

be readily modified to permit their use on the

sectionalized structure disclosed herein. In

order to better understand the operation of the

steering mechanism of the present invention,

some explanation of the general nature of this

type of steering mechanism to be warranted.

Assuming two ski-borne persons comprise the

rescue party, one person would straddle the head-

board section and by assuming the familiar bent-

knee skiing position, could grip the side mem-

bers 24 of this section through suitable hand-

receiving apertures 31, while the other person

would be disposed adjacent the rear section of

the toboggan and the rear grips 38 thereon as

will be presently described. It is understood

of course that in ascending a slope, the leading

person would tow the toboggan by means of

rope or the like, and by providing the hand grips

37 and 38 at both the front and rear of the tobog-

gan, the two persons can readily lift the toboggan

and its occupant so as to carry the same over

extremely rough or snow-covered terrain.

The steering mechanism preferably includes a

rudder member 39 comprising a generally rec-

tangular plate-like member having an arcuate

portion 41 adjacent its leading edge. Member 39

is disposed adjacent the rear edge of the lower

surface of end section 18 and is secured to the

latter by means of a shaft 42 extending through

an aperture 43 in the section, the steering gear

44 being mounted on the upper surface of the

section. Shaft 42 terminates in a bifurcated

portion 45 arranged to overlie and be secured to

the rudder member by a pin or rivet 47. In

this manner, as the shaft 42 is rotated, similar

movement will be imparted to the rudder.

Threadedly engaged in a suitable aperture 48 of

the shaft 42 is a pin 49, provided at its distal

end with an eye 51 for a purpose to be here-

after described. The pin 49 limits axial move-

ment of the shaft when in assembled position,

and by withdrawing the pin, the entire rudder

assembly may be dismantled for more convenient

packing and to permit the rear section 19 to be

properly nested in the headboard section.

Means are provided for actuating the pin 49 so

as to move the rudder member and thereby

steer the toboggan, and as herein shown, such

means permit actuation by a person situated at

either the front or rear of the toboggan without

requiring such persons to remove their hands

from the respective hand grips 37 and 38. The

front control includes a pair of cords 52 secured

at their rear ends to the eye 51 by means of con-

ventional snap fasteners 53, the cords extending

around the rudder grips 38 and longitudinally

along the section rails 38. The cords 52, adja-

cent their front ends, are preferably connected to

short lengths of flexible metal cables 54, the

latter passing through a guide member 56 se-

cured to each of the side members 24 of the head-

board section and terminating at a pair of han-

dles 58 disposed adjacent the hand grips 37.

With this construction, it will be apparent that

when a person is engaging the hand grips, he

may, at the same time, grip the handles 58 and

by applying upward pressure on one of the other

of the handles, the rudder member and the cords 52 will be

moved and the rudder turned in a direction cor-

responding to that which the handle is actuated.

By using the cords 52, the same may easily be

rolled up by detaching the fasteners 52 when the tobaggon is being dismantled.

Normally, when two persons are guiding the tobaggon, the front person will do the steering, but where a single person is performing this task, it is preferable that he place himself at the rear of the tobaggon and steer from that position. To permit this, I provide a pair of webbed straps 55 provided with snap fasteners engageable with the eye 51 and passing under looped staples 51 or similar members to terminate in a pair of handles 63 similarly looped and in line with one of the rear handles, the rudder will correspondingly be moved in a direction of pull, and thus the tobaggon may be steered from the rear position in a simple manner. In steering the tobaggon from the rear position, the steering will engage the rear hand grip 66, and as in the case with the front steering, the construction permits him to actuate the rudder without relinquishing his normal grip on a more stable part of the tobaggon.

The rear hand grips 33 are arranged to extend substantially normal from the rear section 16, and in order to permit the entire structure to be knocked down so as to form a compact bundle, these grips must be either removable, or at least foldable to positions adjacent the upper surface of the section. In Figure 6 of the drawing, I have illustrated a simple means for effecting detachment of the grips, which merely comprise U-shaped tubular element 83. The ends of element 83 are telescopically engageable with a pair of spaced posts 54 secured to the upper surface of the tobaggon section 16 by means of a plate 67. The posts are provided with a groove 67 engageable by the distal end 65 of a detent member 65 mounted on the outer surface of element 83, the end 68 passing through a suitable aperture in the element. In this manner, when element 83 is seated on the studs, the end 68 of the detent will enter the groove 67 of the stud and resist upward displacement of the hand grips, and to remove the latter, it will only be necessary to move the detent out of the groove and lift the elements from their seated position. If desired, as shown in Figure 7, the grips may be conveniently vertically positioned by providing an auxiliary tubular member 71 having a detent engageable with the stud groove, the detent 72 on the grip selectively engageable with longitudinally spaced grooves 73 on the member 71.

In place of the detachable rear hand grips above described, it may be desirable to utilize a folding arrangement whereby each of the grips will be folded inwardly toward the longitudinal centerline of the tobaggon and nest one on top of the other. This may be effected by use of the structure disclosed in Figures 8–10 of the drawing in which each of the U-shaped tubular elements 74 is pivotally secured to a post 76 by means of a pin 77 passing through the post and also through an extension 78 of the element 74. As will be seen, the pins for each of the grips are disposed in different planes whereby when each grip is placed in its folded or stowed position, the grips will be one on top of the other as suggested in Figure 9. Detents 79 are provided and engageable with suitable apertures 81 in the members to releasably support the grips in their extended or upright position.

In connection with the steering mechanism, and as a feature of the invention, means are provided, independent of the rudder, for assisting the tobaggon in maintaining a true course with little or no side sway or yaw. Such means include stabilizers 86 mounted on the outer surfaces of the headboard side members and readily movable from an operative or snow-engaging position disclosed in Figure 12 to an inoperative position disclosed in Figure 11. The stabilizers comprise a generally rectangular metal plate 87 provided with a pair of studs 88 having enlarged heads 89. The heads are arranged to enter a diametrically enlarged portion 91 of longitudinally extending grooves 92 provided in plate 83 secured to the members 24; and by sliding the plate rearwardly, the heads will overlie the grooves 92 and prevent outward withdrawal of the plate. To prevent movement of the plates in a forward direction whereby the heads would register with the enlarged portions 91, a spring loaded detent 94 having a stud 95 is secured to plate 83 and is positioned adjacent the front of the stabilizer plate 87 and normally engages the leading edge of the stabilizer when the latter is mounted on the plate 83. To release the plate, it is only necessary to depress the stud and slide the plate forwardly until the heads are aligned with the groove portions 91 and remove the stabilizer plate from the tobaggon. It will be noted that the studs 85 are positioned away from the longitudinal centerline of the plate whereby by rotating the plate 180 degrees, the lower edge thereof will be selectively placed below or above the lower surface 22 of the tobaggon and thus either be in or out of snow engaging relation. As it is a simple matter to either install or remove the stabilizers, they may be changed from one position to the other in a minimum amount of time and without any complicated mechanical adjustments.

From the foregoing descriptions it will be seen that I have provided a tobaggon with improved steering and stabilizing characteristics which in no way detracts from its ability to be rapidly dismantled for convenient packing. For reasons of clarity of the drawings, no straps or other types of accessories have been illustrated for securing a person to the tobaggon or to brake the tobaggon as such features form no part of the present invention.

I claim:
1. A tobaggon comprising a headboard section, an end section and a plurality of intermediate sections interposed between the headboard and end sections, means cooperative between the respective sections for releasably securing said sections together, said headboard section including a pair of hand grips disposed substantially above the general plane of the tobaggon, said end section including a pair of hand grips disposed substantially immediately above the general plane of the tobaggon, said latter hand grips comprising U-shaped members disposed adjacent each longitudinal edge of the tobaggon, a rudder positioned below the lower surface of said rear section comprising a plate-like member disposed generally normal to the plane of said section, means including a vertically extending shaft for releasably mounting said rudder on said end section, a longitudinally extending element releasably secured to said shaft, handles disposed adjacent each of said front and rear hand grips, flexible members interconnecting each of said handles and said element, and means for guiding said flexible members so as to impart horizontally transverse motion to said element upon upward movement of the handles.
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2. A toboggan comprising a headboard section, an end section and an intermediate section interposed between the headboard and end sections, means cooperative between the respective sections for releasably securing said sections together to provide a substantially flat elongated occupant-supporting surface and a correspondingly shaped snow-engaging surface, said headboard section including side rails extending along the opposite sides thereof, the side rails having apertures therein for manual engagement of the rails by an operator, a rudder disposed below the plane of said snow-engaging surface and operatively connected for rotation to said end section, shaft means connected to said rudder and extending above the plane of said occupant-supporting surface, cord-like members operatively connected to said shaft and generally traversing said end section, said latter members also extending along opposite sides of the sections and terminating adjacent said side rail apertures for engagement by the operator.

3. A toboggan comprising a headboard section, an end section and an intermediate section interposed between the headboard and end sections, means cooperative between the respective sections for releasably securing said sections together to provide a substantially flat elongated occupant-supporting surface and a correspondingly shaped snow-engaging surface, U-shaped members mounted on opposite sides of said end section for manual gripping by an operator, a rudder disposed below the plane of said snow-engaging surface and operatively connected for rotation to said end section, shaft means connected to said rudder and extending above the plane of said occupant-supporting surface, flexible members connected to said shaft and extending generally transversely and in opposite directions across said end section, said latter members terminating adjacent said U-shaped members for manual engagement by the operator whereby upward pulling on said flexible members will impart rotary movement to said shaft.

4. Steering apparatus for a toboggan having an upper occupant-supporting surface, comprising a rudder member disposed below the plane of said lower surface adjacent the rear end of the toboggan and arranged to engage the snow on which the toboggan is placed, a shaft secured to said member and extending above said upper surface, manually engageable means adjacent the sides of said toboggan and having portions thereof connected to said shaft for selective movement of said rudder, and stabilizer plates secured to opposite side surfaces of said toboggan adjacent the front end thereof for engagement with the snow, said stabilizer plates comprising substantially rectangular plate-like members, and attachment means for releasably securing said stabilizer plates to said sides, each of said plates being selectively positioned on said side so as to have a portion thereof selectively positioned above and below said lower toboggan surface.

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