Jan. 1, 1946. D. T. PHILIPPAR 2,392,098

SKI STRUCTURE

Filed April 30, 1942

Fig. 1

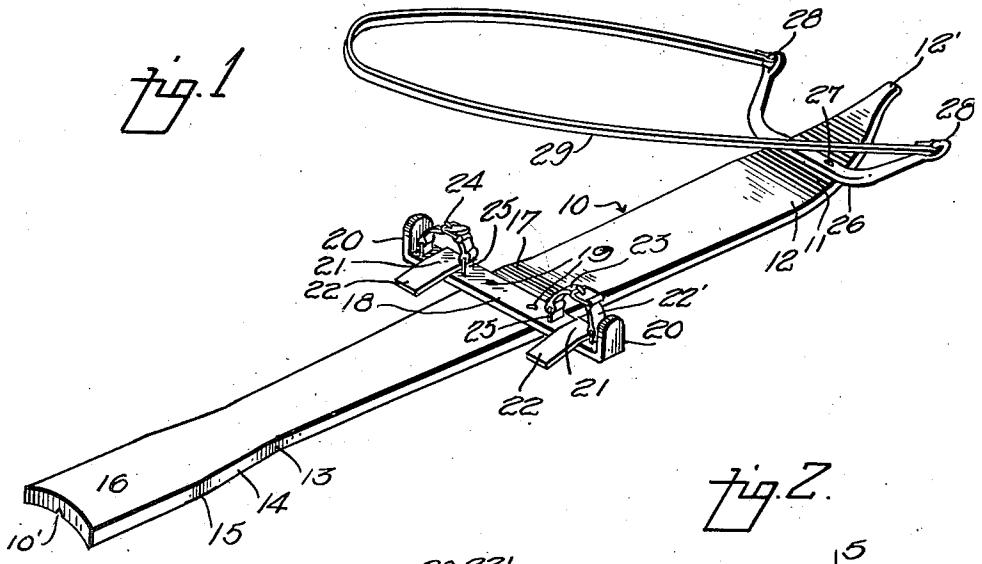



Fig. 2.

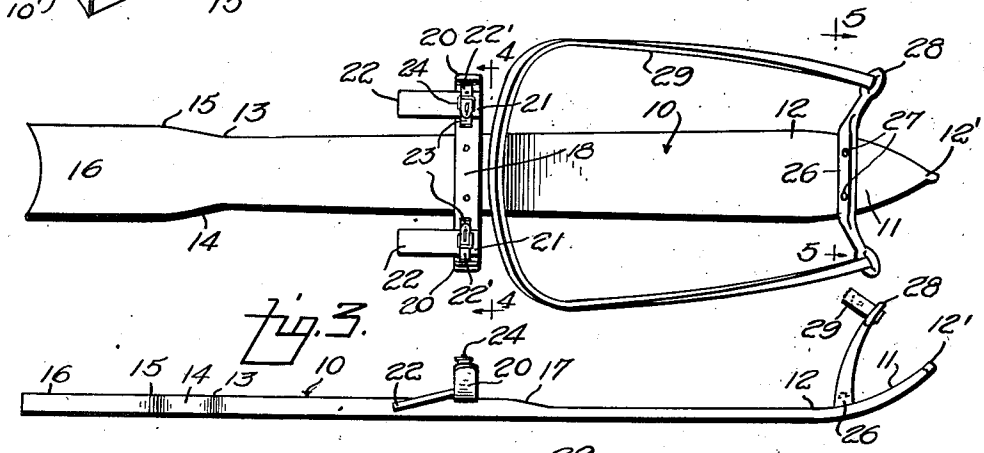



Fig. 3.




Fig. 4.

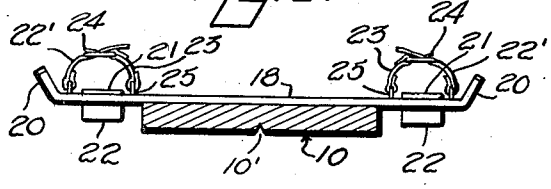



Fig. 5.

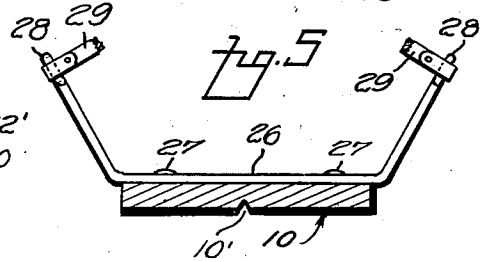
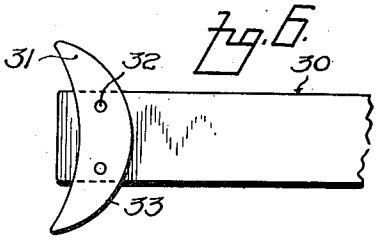



Fig. 6.



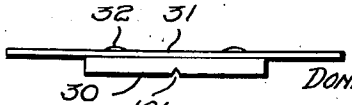




Fig. 7.

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# UNITED STATES PATENT OFFICE

2,392,098

## SKI STRUCTURE

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Application April 30, 1942, Serial No. 441,186

10 Claims. (Cl. 280—12)

This invention relates to skis, and more particularly to a single ski structure upon which a rider can stand with both feet as distinguished from a conventional ski construction wherein a separate ski is provided for each foot.

An important object of the invention is to provide a ski of the character referred to so constructed as to facilitate the steering of the device by the user.

A further object is to provide a single ski structure portions of which are flexible to permit distortion thereof to facilitate the steering of the device.

A further object is to provide such a ski which is not only capable of being steered within reasonable limits because of its inherent characteristic of flexibility, but which is provided with portions or separate means engageable with the snow over which the device is traveling to provide for even greater latitude in steering the device.

A further object is to provide a ski structure the forward end of which is capable of being twisted to facilitate the steering of the device, and to be bent upwardly whereby the device is adapted to ride more smoothly over uneven snow surfaces.

A further object is to provide means under the control of each foot of the user for further facilitating the steering of the device, and which means may be simultaneously operated by the user to serve as a brake for bringing the device to a stop.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawing I have shown two embodiments of the invention. In this showing—

Figure 1 is a perspective view of the device,

Figure 2 is a plan view thereof,

Figure 3 is a side elevation of the same,

Figure 4 is an enlarged detail sectional view on line 4—4 of Figure 2, parts being shown in elevation,

Figure 5 is a sectional view on line 5—5 of Figure 2, parts being broken away,

Figure 6 is a fragmentary plan view of the rear end of a modified form of the invention, and

Figure 7 is a rear end view of the same.

Referring to Figures 1 to 5 inclusive, the numeral 10 designates the ski body as a whole formed of suitable wood or other material possessing a reasonable degree of electricity, as will be apparent. It also will become apparent that the present device utilizes a single ski body 10 to support the user rather than separate skis for the two feet of the user as is now the common practice, and the ski body is grooved longitudinally in its under side as at 10' as is customary in conventional skis. The body 10 has its forward end 11 turned upwardly as shown in Figures 1 and 3 to facilitate the movement of the device over the surface of the snow, and the forward end of the body tapers substantially to a point 12'. From this point the body increases in width approximately to the point 12, which is the point at which the ski body starts to curve upwardly toward its forward end. From the point 12 to its rear extremity the body has its bottom surface formed flat. Moreover, the width of the body at the point 12 is the maximum width for the forward portion of the ski, the width gradually decreasing, as shown in Figures 1 and 2, to a point 13 spaced a short distance forwardly of the rear end of the ski body. From the point 13 the ski body has its edges diverging as at 14 approximately to the point 15, and the rear end portion 16 of the body from the point 15 to the rear extremity of the body, is of uniform width. The point 12 of the body is at least as wide as the rear end portion 16 so as to permit it to break trail without having the rear end 16 drag its edges through the snow.

From a substantially central point 17 (Figures 1 and 3) to its forward end, the ski body is thinner than the portion rearwardly of the point 17. Thus the forward end portion of the ski possesses a substantially greater degree of flexibility and resiliency than the rear portion of the ski, and this is of importance, as will become apparent.

A cross plate 18 extends transversely of the ski adjacent the center of the length thereof and may be riveted as at 19 or otherwise secured to the ski body. The ends of the cross plate 18 are preferably turned upwardly as at 20. The cross plate 18 extends a substantial distance beyond the edges of the ski body and each end portion of the plate 18 is provided with a spring steel or similar plate 21, the forward end of which is fixed to the plate 18. Each spring plate 21 has its rear end 22 extending a substantial distance rearwardly of the cross plate 18 and sloping downwardly at somewhat of an angle, as shown in Figures 1 and 3. The wearer stands upon the forward ends of the spring plates 21 with his heels resting on the ends 22 thereof, and such ends of the spring plates may be separately sprung downwardly to assist in steering the device, or may be sprung downwardly simultaneously to act as

brakes, as will be described. In its normal position, the rear extremity of each spring plate end 22 is arranged above the horizontal plane of the bottom surface of the ski body so that it does not normally act as a brake when passing over the surface of the snow.

Each end of the cross plate 18 is provided with straps 22' and 23 adapted to bridge over the spring plate 21 and provided with a buckle 24 for connecting them together as clearly shown in Figure 4. The ends of the straps 22' and 23 may be connected to the cross plate 18 by loops 25 which may be riveted or welded to the plate 18. The straps 22' and 23 serve as straps to receive the feet of the user and extend over the instep of the foot, as will be obvious.

The forward end of the ski body 10 is provided with a cross bar 26 riveted thereto as at 27 or otherwise secured in position. This bar has its ends extending laterally beyond the edges of the ski body and upwardy as shown in Figures 1 and 5, and the extremities of the bar are formed as loops 28. A flexible loop 29, preferably a leather strap, has its ends secured to the loops 28 and is of such length as to permit it to be grasped by the user in a standing or crouching position on the device, as will be obvious.

In the forms of the invention shown in Figures 6 and 7, a ski body 30 is employed which is almost identical with the form of ski body previously described except that it is of uniform width throughout its length, rearwardly of the pointed forward end, the flared rear end 16 being eliminated. To provide the same dragging effect as the diverting edges 14, the ski body 30 is provided with a plate 31 secured thereto as at 32, and having its forward edge 33 formed in substantially semi-circular shape. The end portions of the plate 31 obviously extend beyond the edges of the ski body.

The operation of the form of the invention shown in Figures 1 to 5 inclusive is as follows:

The user stands upon the spring plates 21, the forward end of the foot being inserted in the straps 22' and 23 which act as stirrups. The heels of the user will rest lightly upon the rearwardly projecting ends 22 of the spring plates. The strap 29 will be grasped in both hands, whereupon the user or rider is ready to start forward. As is true in the use of conventional skis, the user may slide down inclines on the device and he will attain speeds approximately equal to those attained when wearing conventional skis. The present device, however, is far more practical for use by people who are not highly skilled in the use of conventional skis and is far safer since conventional skis frequently become crossed or otherwise out of control and throw the wearer to the ground with frequent painful injuries. The present device is subject to much easier control, than is true of conventional skis, since it may be accurately controlled as to steering and may be brought to a quick stop, when desired.

When the rider desires to turn, he may pull on one end or the other of the strap 29 to twist the forward and more resilient end of the ski body, and the ski will turn in the direction of the twist. While this will permit a gradual turn which frequently is all the rider desires, it will not provide as sharp a turn as may be desired under some conditions. When a sharper turn is desired, the rider may lean in the direction of the desired turn, thus causing the corresponding edge of the ski to tilt downwardly. Under such condition the corresponding rearwardly diverging edge 14 would drag against the edge of the track made by the ski, thus tending to retard such edge of the ski and increase the sharpness of the turn in the same direction. If a still sharper turn is desired, the rider may bear relatively heavily with his heel upon the spring plate end 22 at the side toward which the turn is being made. This will effect a still further drag and thus result in an even further sharpness of the turning movement.

It will be apparent that the resiliency of the forward end of the ski is such as to permit it to be pulled straight upwardly as well as to be twisted, and this is of importance in providing a smoother action of the device. When passing over relatively uneven snow, the rider may lean backwardly somewhat and exert an equal pull on both ends of the strap 29. This will effect an upward flexing of the forward end of the ski body, in which case the bottom surface of the ski will be slightly curved upwardly from the point 17 to the point 12, this curvature being in addition to the curvature forwardly of the point 12. Thus the skier will be enabled to more easily slide over uneven surfaces with much less tendency for the forward end of the ski body to dig into the snow. The straps 29 are of importance at all times in the use of the device since they provide assistance to the rider in balancing himself.

The ski body at the point 12 is at least as wide as the rear end 16. Thus in straight away riding, the edges of the ski body adjacent the point 12 will break trail for the ski, thus forming a track which is at least as wide as the rear end 16 of the ski body and the latter therefore will not drag at its edges against the snow. The widened rear end 16 is desirable not only to assist in steering the device but also to assist in causing the ski to travel in a straight line, when desired. Without the flared edges 14 and wider rear end 16 there is some tendency for the ski to slide sideways.

When it is desired to retard the speed of the device or to bring it to a complete stop, the rider will bear downwardly with both heels on the ends 22 of the spring plates, thus quickly retarding both edges of the device, instead of one edge as in steering. Thus the rider and the device may be slowed down or stopped, depending upon the downward pressure exerted on the ends 22 of the spring plates.

The operation of the form of the device shown in Figures 6 and 7 is identical with that previously described, the only difference being that the ends of the plate 31 serve the same function as the diverging edges 14, either end of the plate 31 serving to engage the snow to provide a drag at one side of the ski upon the tilting thereof, to thus effect a dragging action to assist in steering the ski.

Thus the present device provides a ski which may be readily and safely used by novices and affords all of the sport and excitement of conventional skis without the danger inherent in the use thereof and the substantial skill required for their proper handling.

It is to be understood that the forms of the invention herewith shown and described are to be taken as preferred examples of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A ski comprising an elongated body having a relatively rigid rear end portion and a relatively elastic forward end portion of substantial length, a rigid cross member connected to said body closely adjacent its forward end and extending substantially beyond the lateral edges thereof and terminating in ends substantially above said body, and flexible means having ends connected to the respective ends of said cross member whereby the rider of the ski may effect upward movement of either end of said cross member to twist the forward end of said body, or upward movement of both ends of said cross member to curve the forward end of said body straight upwardly toward its forward extremity.

2. A ski comprising an elongated relatively flat body having relatively flat top and bottom surfaces throughout the greater portion of its length with the forward extremity of said body curved upwardly, said body having its forward end portion of less thickness than the rear end portion thereof whereby such forward end portion will possess a greater degree of elasticity than said rear end portion, a cross member directly secured to the flat top surface of said body centrally of the length of said body having its ends extending substantially beyond the edges of said body and on which ends the rider is adapted to stand, and means under the control of the operator for flexing the end of said body.

3. A ski comprising an elongated body having a relatively flat bottom surface throughout the greater portion of its length with the forward extremity of said body curved upwardly, said body having its forward end portion of less thickness than the rear end portion thereof whereby such forward end portion will possess a greater degree of elasticity than said rear end portion, a cross member directly secured to said body centrally of the length of said body having its ends extending substantially beyond the edges of said body and on which the rider is adapted to stand, and a flexible loop having mechanical connection at its ends with said body adjacent the forward end thereof at relatively widely spaced points whereby the rider may pull either end of said flexible loop to twist the forward end of said body, or both ends of said flexible loop to curve the forward end of said body upwardly toward its forward extremity.

4. A ski comprising an elongated body having a relatively flat bottom surface throughout the greater portion of its length with the forward extremity of said body curved upwardly, said body having its forward end portion of less thickness than the rear end portion thereof whereby such forward end portion will possess a greater degree of elasticity than said rear end portion, a cross member centrally of the length of said body on which the rider is adapted to stand, and a flexible loop having mechanical connection at its ends with said body adjacent the forward end thereof at relatively widely spaced points whereby the rider may pull either end of said flexible loop to twist the forward end of said body, or both ends of said flexible loop to curve the forward end of said body upwardly toward its forward extremity, the rear end portion of said body having opposite laterally projecting portions for facilitating the turning of said body by the rider upon lateral tilting movement of said body.

5. A ski comprising an elongated body having a relatively flat bottom surface throughout the greater portion of its length with the forward extremity of said body curved upwardly, said body having its forward end portion of less thickness than the rear end portion thereof whereby such forward end portion will possess a greater degree of elasticity than said rear end portion, a cross member centrally of the length of said body on which the rider is adapted to stand, and a flexible loop having mechanical connection at its ends with said body adjacent the forward end thereof at relatively widely spaced points whereby the rider may pull either end of said flexible loop to twist the forward end of said body, or both ends of said flexible loop to curve the forward end of said body upwardly toward its forward extremity, said body being tapered to decrease in width from a point adjacent its forward end to a point spaced from its rear end, the end portion of said body rearwardly of said latter point being of a width approximately equal to the width of said body at said first named point.

6. A ski comprising a unitary body of a material possessing an appreciable degree of resiliency, said body being elongated with a relatively flat bottom surface extending from a point adjacent the forward end of the body to the rear extremity thereof, the forward end portion of said body being of less thickness than the rear end portion whereby it possesses a greater degree of resiliency than said rear end portion, a cross bar carried by said body approximately centrally of the length thereof and extending beyond its lateral edges and on the end portions of which the rider is adapted to stand, a cross member carried by the said body adjacent the forward extremity thereof and projecting beyond its lateral edges, and a flexible element connected at its ends to the ends of said cross member and adapted to be grasped by the rider whereby either end of said cross member may be pulled upwardly to twist the forward end portion of said body, or both ends of said cross member may be pulled straight upwardly to curve the bottom surface of the forward end portion of said body upwardly toward its forward extremity.

7. A ski comprising a unitary body of a material possessing an appreciable degree of resiliency, said body being elongated with a relatively flat bottom surface extending from a point adjacent the forward end of the body to the rear extremity thereof, the forward end portion of said body being of less thickness than the rear end portion whereby it possesses a greater degree of resiliency than said rear end portion, a cross bar carried by said body approximately centrally of the length thereof and extending beyond its lateral edges and on the end portions of which the rider is adapted to stand, a relatively flat spring element projecting rearwardly from the end portions of said cross bar to be selectively or simultaneously depressed by the heel or heels of the rider, a cross member carried by said body adjacent the forward extremity thereof and projecting beyond its lateral edges, and a flexible element connected at its ends to the ends of said cross member and adapted to be grasped by the rider whereby either end of said cross member may be pulled upwardly to twist the forward end portion of said body, or both ends of said cross member may be pulled straight upwardly to curve the bottom surface of the forward end portion of said body upwardly toward its forward extremity.

8. A ski comprising a unitary body of a material possessing an appreciable degree of resiliency, said body being elongated with a relatively flat bottom surface extending from a point adjacent the forward end of the body to the rear extremity

thereof, the forward end portion of said body being of less thickness than the rear end portion whereby it possesses a greater degree of resiliency than said rear end portion, a cross bar carried by said body approximately centrally of the length thereof and extending beyond its lateral edges and on the end portions of which the rider is adapted to stand, a cross member carried by said body adjacent the forward extremity thereof and projecting beyond its lateral edges, and a flexible element connected at its ends to the ends of said cross member and adapted to be grasped by the rider whereby either end of said cross member may be pulled upwardly to twist the forward end portion of said body, or both ends of said cross member may be pulled straight upwardly to curve the bottom surface of the forward end portion of said body upwardly toward its forward extremity, said body being tapered to decrease in width from a point adjacent its forward end to a point spaced from its rear end, said body rearwardly of the latter point being wider than the narrowest point of said body but no wider than said body at said first named point.

9. A ski comprising an elongated relatively flat body having relatively flat top and bottom surfaces throughout the greater portion of its length with the forward extremity of said body curved upwardly, a cross member rigidly secured to the upper surface of said body intermediate the ends thereof and extending substantially beyond the edges of said body to provide supports on which the rider is adapted to stand, means connected to said bodily forwardly of said cross member and engageable by the hands of the rider to steady him in a standing position thereon, and means adjacent and under the control of the rider's feet while standing on said cross member for assisting in turning movement of said body.

10. A ski comprising an elongated body having a relatively flat bottom surface throughout the greater portion of its length with the forward extremity of said body curved upwardly, a cross member rigidly secured to said body intermediate the ends thereof and extending substantially beyond the edges of said body to provide supports on which the rider is adapted to stand, means connected to said body forwardly of said cross member and engageable by the hands of the rider to steady him in a standing position thereon, and means carried by the projecting ends of said cross member and each engageable by one foot of the rider while standing on said cross member to be moved downwardly into engagement with the supporting surface to facilitate turning movement of said body.

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