April 16, 1968 A. M. ROCKWOOD ET AL 3,378,275

SKI BOARD

Filed March 24, 1966

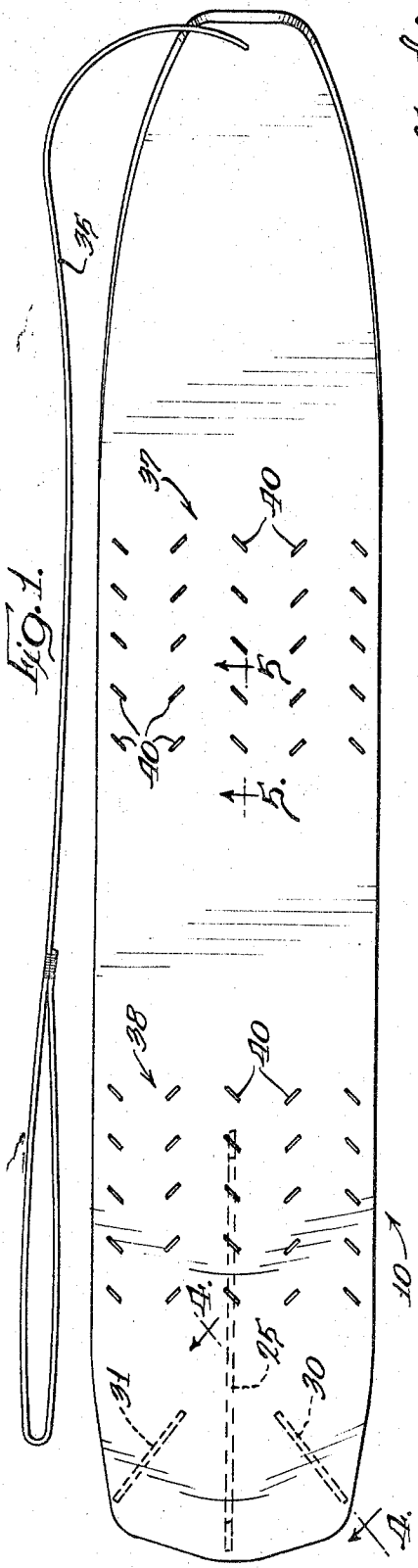

Fig. 1.

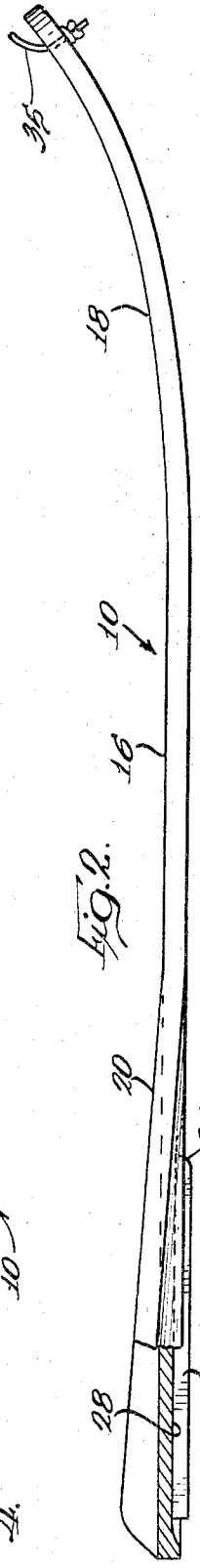

Fig. 2.

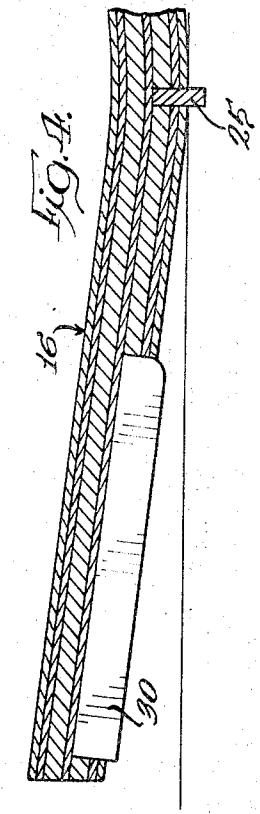

Fig. 4.

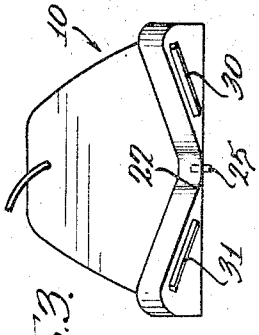

Fig. 3.

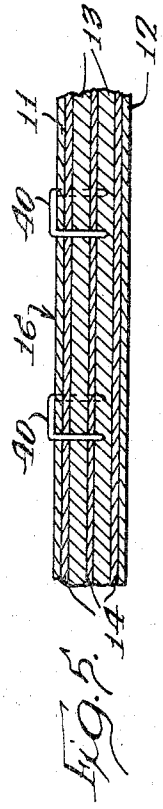

Fig. 5.

Inventors:
Albert M. Rockwood
Michael G. Gautraud
David P. J. McLeod
John J. Dragone
By Hofgren, Wegner, Allen, Stellman & McCord
Attys

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SKI BOARD

Albert M. Rockwood, North Muskegon, Michael G. Gautraud and David P. J. McLeod, Muskegon, and John J. Dragone, North Muskegon, Mich., assignors to Brunswick Corporation, a corporation of Delaware

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ABSTRACT OF THE DISCLOSURE

A ski having a longitudinal axis including a bottom surface having a generally flat intermediate portion, a front portion extending upwardly from the intermediate portion and a rear portion of generally V-shaped cross section taken transversely to the longitudinal axis and extending rearwardly from the intermediate portion with the center of the rear portion extending longitudinally in the plane of the intermediate portion.

More particularly, the ski or ski board is adapted for use singly, rather than in pairs, by a rider who places his feet on the board one in front of the other and guides the path of the board by tilting the same from side to side in response to a shift of his weight from one side to the other, in a manner similar to that in which surfboards and skateboards are ridden. Preferably, in order to provide the rider with a higher degree of stability, the board is provided with a rope having one end attached to the front of the board and a length sufficient for the skier to hold the other end.

It is a general object of this invention to provide a new and improved board of the type described.

A more specific object is to provide a new and improved ski board including a midportion having a substantially flat bottom surface, a front portion curving upwardly from the midportion to a front tip, and a rear portion extending rearwardly from the midportion to the rear end and having a bottom surface of V-shaped cross section.

Another object is to provide a new and improved board of the type described in the preceding paragraph wherein the V-shaped bottom surface at the rear end is of increasing depth toward the rear end.

A further object is to provide a new and improved ski board of the type described having a uniform thickness throughout.

It is also an object of the invention to provide a new and improved ski board of the type described wherein the midportion, the front portion and the rear portion, of the bottom surface each comprise about one-third the total length of the board.

Another object is to provide a new and improved board of the type described including one footrest means on the upper surface of the ski approximately at the midportion and another footrest means on the upper surface of the ski approximately at the rear portion.

An additional object is to provide a new and improved ski board of the type described including a guiding keel extending along a central longituidnal axis of the ski and projecting from the bottom surface of the ski for at least part of the length of the rear portion thereof.

Another object is to provide a new and improved ski of the character mentioned including adjacent the rear end thereof a pair of guide vanes respectively on opposite sides of the longitudinal axis of the ski projecting from the bottom surface thereof and extending forwardly and inwardly toward the axis of the ski.

A further object is to provide a new and improved ski of the type described wherein each footrest means includes frictional resistance means to prevent skidding of a shoe thereon.

It is also an object to provide in a new and improved ski a novel footrest means consisting of frictional means resistant to shoe skid and also self-cleaning for removing snow.

Other objects and advantages will become readily apparent from the following detailed description taken in connection with the accompanying drawings, in which:

FIG. 1 is a top plan view of a ski board embodying the principles of the present invention;

FIG. 2 is a side elevational view of the board illustrated in FIG. 1, partly in section;

FIG. 3 is a rear end elevational view of the board illustrated in FIGS. 1 and 2;

FIG. 4 is an enlarged fragmentary sectional view taken at about line 4—4 of FIG. 1; and

FIG. 5 is an enlarged fragmentary sectional view taken at about line 5—5 of FIG. 1.

FIGS. 1 and 2 are not to exact proportions because the width and thickness of the ski have been slightly exaggerated relative to the length for better illustration.

While an illustrative embodiment of the invention is shown in the drawings and will be described in detail herein, the invention is susceptible of embodiment in many different forms, and it should be understood that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated. The scope of the invention will be pointed out in the appended claims.

Referring now to the drawings in more detail, the improved ski comprises a board generally designated **10** of relatively rigid material which may but which need not necessarily flex significantly during use. In a preferred form as illustrated herein, the board is comprised of a plurality of laminated plies of uneven number, seven as illustrated in FIG. 2, outer and alternate ones of which contain longitudinal wood grain, and intervening ones of which contain grain extending transverse to the length of the ski. The outer plies are designated **11** and **12** for top and bottom, respectively. The alternate inner plies are designated **13** and are somewhat thicker than the outer plies, and the intervening three plies are designated **14** and are of a thickness approximately equal to the thickness of the outer plies. Each ply is of substantially uniform thickness throughout so that the over-all board is of uniform thickness. In manufacture the plies are laid up together with appropriate intervening glue in a pressure mold suitable for bonding the plies and shaping the ski as illustrated and described. Subsequent to bonding and shaping, the outer perimeter of the ski may be finished smoothly and the over-all outer surface appropriately covered with a moisture-resistant coating.

The ski includes a midportion **16** preferably having a substantially flat bottom surface, a front portion **18** which is substantially flat on the bottom transversely but curves upwardly from the midportion toward the front tip of the ski which is of reducing width and appropriately rounded at the end, and a rear portion **20** extending rearwardly from the midportion **16** to a rear end.

As seen in FIGS. 2, 3 and 4, the rear portion **20** preferably has a bottom surface of V-shaped cross section which increases in depth toward the rear end. The crest of the V-shaped rear portion falls along the longitudinal centerline of the ski.

In view of the uniform thickness of the ski throughout, the upper surface of the ski is parallel to the bottom surface of the ski and the top surface has a shape similar to the bottom surface. In this manner, the manufacture is facilitated since all of the pieces are of substantially the same size. It is therefore relatively simple to manufacture the ski by laying up the various plies one on top of the

other with the edges appropriately aligned for bonding of the layers in the mold or press. However, it should be understood that the ski may be made in other ways, as by injection or other molding processess of plastic materials, providing a bottom shape and guide means as described herein but not necessarily with uniform thickness throughout and an upper surface as described herein.

With the weight of the rider primarily on the flat midportion, the ski can be made to track in a substantially straight path. With the weight shifted rearwardly, the V-shaped bottom surface at the rear portion of the ski is important in providing the capability of guidance by the skier by tilting the ski to one side or the other in response to a shift in the weight of the rider from one side to the other. More particularly, as the ski is tilted to one side or the other, the V-shaped bottom surface at the rear end functions as a guide so that while the ski is in progress forwardly, a tilting toward the left causes a turning toward the left and a tilting toward the right causes a turning toward the right. In order to produce a satisfactory response for guiding, the crest of the V should have some degree of sharpness and it has been found that in a ski with approximately the dimensions of that described herein, the radius of curvature at **22** on the crest of the V should not be significantly more than one inch, and preferably should be somewhat less than one inch, on the order of ¾".

In the preferred form illustrated, the ski is about four feet long, has a width about one-eighth the length, on the order of seven inches, and is about 9/16" thick. The elevation from the centerline to the highest portion of the edge at the rear is about ⅞". The midportion, the front portion and the rear portion each are approximately one-third the length of the ski. In the form illustrated where the over-all length is 48", the front portion is 16", the midportion is 14" and the rear portion is 18". The forward end of the ski curves upwardly about 3⅞" from the midportion to the front end. Obviously, there may be departures from the preferred form illustrated without departing from the scope of the invention.

While the ski maneuvers nicely with a V-shaped rear portion bottom surface as described, somewhat improved response is obtained if the bottom surface of the ski at the rear portion thereof is provided with a relatively sharply defined ridge. Accordingly, to such an end, the ski may be provided with a central guiding keel or blade as at **25**, extending along a central longitudinal axis of the ski and projecting from the bottom surface thereof for at least part of the length of the rear portion of the ski. In the embodiment illustrated, the blade **25** is approximately eleven inches in length and has a somewhat rounded front, as at **26**, and projects downwardly from the bottom surface of the ski about ⅛". In practice, it has been found that the length of the blade may be varied from a minimum on the order of six inches, below which insufficient response may be obtained, to as much as twelve inches, but a significantly greater length does not produce significantly increased control. In the form shown, the blade **25** is mounted by tight fit in a preformed slot as at **28** in the bottom of the ski.

In actual devices constructed and tested, the ski responds nicely with the center keel blade as previously described, but even more sensitive or pronounced control is obtained by means of additional guide vanes as at **30** and **31** located near the rear end of the ski, projecting slightly from the bottom surface of the ski on opposite sides of the longitudinal centerline and extending forwardly and inwardly toward the axis of the ski. As shown, the guide vanes **30** and **31** have a length slightly in excess of three inches and project downwardly from the bottom surface of the ski about ⅛" uniformly throughout the length. Like the center blade **25**, they may be tightly fitted in preformed slots and also like the blade **25**, they may be of metal on the order of 1/16" to 3/16" thick.

It will be understood that if the ski is tilted to the left during forward progress, the inclination of the blade **31** relative to the length of the ski will serve to force the rear end of the ski toward the right as the blade edges the snow or sand, causing the ski to turn left. Conversely, if the ski is tilted to the right, the blade **30** causes the rear end to go to the left, turning the ski to the right.

In order to improve the stability of the rider on the ski, it may be provided with a rope as at **35** having one end appropriately anchored at the front end of the ski and having a length sufficient to enable the rider to hold the opposite end, while standing. In practice, a rope having a length less than the length of the ski, sometimes one-half the length of the ski, has been found to be suitable.

The upper surface of the ski is provided with a footrest means **37** at about the midportion thereof and another footrest means **38** at the rear portion thereof enabling the skier to stand on the board with one foot in front of the other. As illustrated herein, each footrest means comprises a frictional resistance device to prevent skidding of a rider's boot or shoe on the ski. Preferably, such non-skid means takes the form of a plurality of rows of inverted U-shaped staples **40** driven into and embedded in the ski with the crosspiece of the U on the upper surface of the ski. Each of the staples is disposed with the length of the crosspiece of the U inclined relative to the length of the ski, with some staples extending forwardly and laterally in one direction and with other staples extending forwardly and laterally in the opposite direction. As shown, all the staples in one row are inclined in one direction and those in alternate rows are inclined in opposite directions. In addition to resisting slippage, the staples are self-cleaning if the skier removes his weight from his shoe and slides the shoe longitudinally of the ski. Such action will serve to clean both the shoe and the ski.

As mentioned above, the ski or ski board of this invention is usable on snow or on sand and possibly other similar surfaces. In practice, it appears that some snow conditions offer less resistance to movement than does sand so that with a given ski and a given slope, movement may be somewhat faster on snow, but with sufficient slope adequate speed and maneuverability are obtained on both surfaces for thrilling recreation in both winter and summer seasons.

We claim:

1. A ski having a longitudinal axis and including a bottom surface having a generally flat intermediate portion, a front portion extending upwardly from the intermediate portion to a front end, and a rear portion having a cross section transverse to said longitudinal axis of a generally V-shaped extending rearwardly from the intermediate portion to a rear end, with the center of the rear portion extending longitudinally in the plane of the intermediate portion.

2. A ski as defined in claim **1** wherein the V-shaped cross section of the rear portion of the bottom surface has an increasing depth from the intermediate portion to the rear end.

3. A ski as defined in claim **1** wherein the intermediate portion, the front portion and the rear portion each comprises approximately one-third the length of the ski.

4. A ski as defined in claim **1** wherein the front portion is slightly longer than the intermediate portion, and the rear portion is slightly longer than the front portion.

5. A ski as defined in claim **1**, of substantially uniform thickness throughout its length and width, so that an upper surface thereof is substantially parallel to the bottom surface thereof throughout the length and width of the ski.

6. A ski as defined in claim **1** including a footrest on an upper surface of the ski in the intermediate portion thereof, and a footrest on the upper surface of the ski in the rear portion thereof.

7. A ski as defined in claim **1**, including a guiding keel blade extending along a central longitudinal axis of the

ski and projecting from the bottom surface of the ski for at least part of the length of the rear portion thereof.

8. A ski as defined in claim 1, including adjacent the rear end thereof a pair of guide vanes projecting from the bottom surface of the ski and extending forwardly and inwardly toward the longitudinal axis of the ski.

9. A ski as defined in claim 1, including a rope attached to the front portion of the ski and having a length somewhat less than the length of the ski.

10. A ski board for use singly by a rider placing his feet one in front of the other thereon and adapted to be guided by the rider shifting his weight rearwardly on the ski and tilting the ski to one side or the other by shifting his weight to one side or the other, including an intermediate portion having a generally flat bottom surface, a front portion extending forwardly from the intermediate portion to a front end and having a generally flat bottom surface transversely of the ski but curving upwardly from the intermediate portion to the front end, and a rear portion extending rearwardly from the intermediate portion to a rear end and having a bottom surface of transverse generally V-shaped cross section of increasing depth from the intermediate portion to the rear end, with the bottom of the V extending longitudinally rearwardly substantially in the plane of the bottom surface of the intermediate portion.

11. A ski board as defined in claim 10 comprising a plurality of laminates bonded together and having a uniform thickness throughout the length and width of the ski so that a top surface of the ski is parallel to the bottom surface of the ski, facilitating manufacture.

12. A ski board as defined in claim 10, wherein each of the intermediate portion, the front portion and the rear portion comprises approximately one-third the length of the ski.

13. A ski board as defined in claim 10, including a footrest on the top surface of the ski at approximately the intermediate portion thereof, and a footrest on the top surface of the ski located approximately on the rear portion of the ski.

14. A ski board as defined in claim 13 wherein each footrest comprises frictional resistance means on the top surface of the ski to resist slippage of a shoe thereon.

15. A ski board as defined in claim 10 wherein the over-all length is approximately four feet, the width for the major length of the ski is approximately one-eighth the length, the midportion, the front portion and the rear portion are each approximately one-third the length of the ski, but the front portion is slightly longer than the midportion and the rear portion is slightly longer than the front portion.

16. A ski board as defined in claim 10, including a guiding keel blade on the bottom of the ski along the central longitudinal axis thereof and projecting from the bottom surface of the ski a uniform distance for part of the length of the rear portion thereof.

17. A ski board as defined in claim 17 including a rope attached to the front end of the ski and having a length approximately equal the length of the ski.

18. A ski board for use singly by a rider placing his feet one in front of the other thereon and adapted to be guided by tilting the ski to one side or the other in response to the rider shifting his weight to one side or the other, including a midportion having a substantially flat bottom surface, a front portion extending forwardly from the midportion to a front end and having a substantially flat bottom surface transversely of the ski but curving upwardly from the midportion to the front end, a rear portion extending rearwardly from the midportion to a rear end and having a bottom surface of V-shaped cross section of increasing depth from the midportion to the rear end, a footrest on the top surface of the ski at approximately the midportion thereof, a footrest on the top surface of the ski located approximately on the rear portion of the ski, each footrest comprising frictional resistance means on the top surface of the ski to resist slippage of a shoe thereon, and each frictional resistance means comprising a plurality of parallel rows of staples on the top surface of the ski, the staples being inclined relative to the longitudinal axis of the ski, some extending forwardly and laterally in one direction and others extending forwardly and laterally in the other direction, to resist shoe skid and be self-cleaning.

19. A ski board for use singly by a rider placing his feet one in front of the other thereon and adapted to be guided by tilting the ski to one side or the other in response to the rider shifting his weight to one side or the other, including a midportion having a substantially flat bottom surface, a front portion extending forwardly from the midportion to a front end and having a substantially flat bottom surface transversely of the ski but curving upwardly from the midportion to the front end, and a rear portion extending rearwardly from the midportion to a rear end and having a bottom surface of V-shaped cross section of increasing depth from the midportion to the rear end and having adjacent the rear end thereof a pair of similar guide blades on the bottom of the ski projecting a uniform distance from the bottom surface of the ski throughout the length of each blade on opposite sides of the longitudinal axis of the ski and extending forwardly and inwardly toward the longitudinal axis of the ski.

20. A ski board for use singly by a rider placing his feet one in front of the other thereon and adapted to be guided by tilting the ski to one side or the other in response to the rider shifting his weight to one side or the other, including a midportion having a substantially flat bottom surface, a front portion extending forwardly from the midportion to a front end and having a substantially flat bottom surface transversely of the ski but curving upwardly from the midportion to the front end, a rear portion extending rearwardly from the midportion to a rear end and having a bottom surface of V-shaped cross section of increasing depth from the midportion to the rear end, each of the midportion, the fornt portion and the rear portion comprising approximately one-third the length of the ski, a nonskid footrest on the top surface of the ski approximately at the midportion thereof, a footrest on the top surface of the ski approximately at the rear portion thereof, a guiding keel blade extending along a central longitudinal axis of the ski and projecting from the bottom surface thereof for at least part of the length of the rear portion thereof, a pair of guide vanes on opposite sides of the longitudinal axis of the ski adjacent the rear end thereof projecting from the bottom surface of the ski and extending forwardly and inwardly toward the longitudinal axis of the ski, and a rope attached to the front end of the ski.

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BENJAMIN HERSH, *Primary Examiner.*

MILTON L. SMITH, *Examiner.*