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SKIING SURFACE

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Fig. 1.

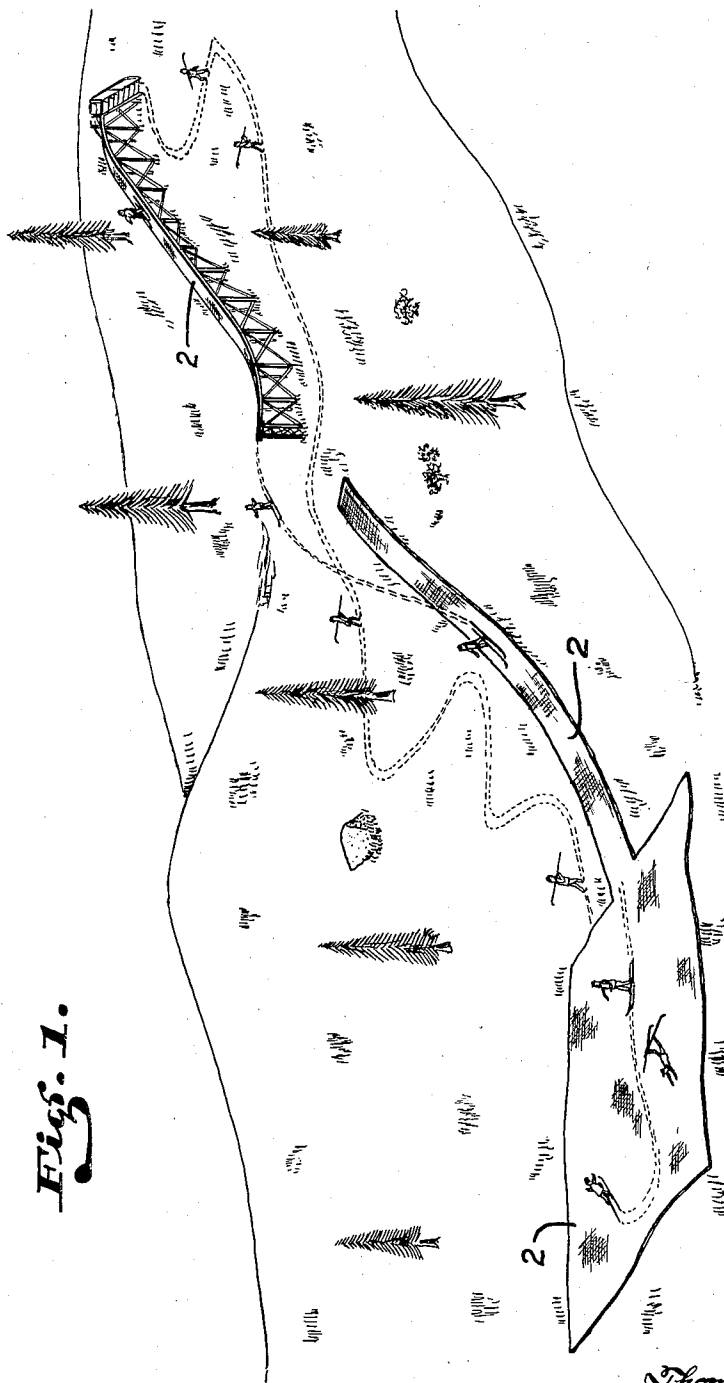


Fig. 3.

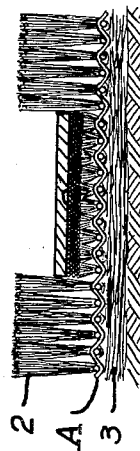
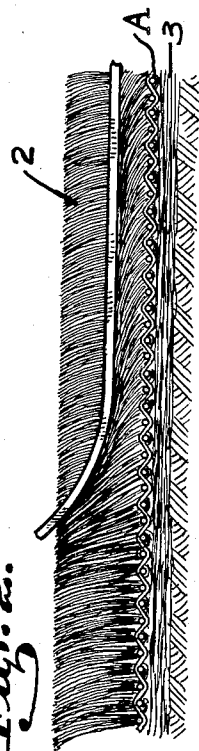


Fig. 2.



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SKIING SURFACE

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1 Claim. (Cl. 139—391)

The sport of skiing was introduced into the United States perhaps a half a century or more ago and has gradually become one of the most popular of winter sports wherever sufficient snow is available. Regardless of location, the skiing season is usually short. With the shortness of the season now available to ski lovers, it is not possible to keep in physical training, since the muscles used in skiing become soft in the interval between seasons; and there also results a considerable loss in experience and in acquiring skiing skill. To the best of applicant's knowledge no suitable skiing substitute has heretofore ever been devised for snow.

By my invention an artificial surface has been developed which is suitable for skiing at all seasons and is not detrimentally affected either by rain or temperature changes. In constructing a successful skiing surface many features had to be considered:

(1) A material had to be selected which would give a low coefficient of friction with relation to the bottom surface of a ski.

(2) The material forming the surface should be soft enough to permit the skis to sink in a sufficient distance to permit steering of the skis.

(3) The material must not change its coefficient of friction with change in temperature.

(4) The material must not change its coefficient of friction with change in moisture content.

(5) The material must be strong to resist pull, impact, wear, and tearing force through use, particularly when travel may at times be at high speed or when jumping may take place.

It is recognized that numerous materials, such as borax, sugar, salt, soap powder, and other chemicals and substances have been used in connection with a carpet to simulate a ski surface. Such a surface, after a little use, becomes compacted and is more like ice than snow, and, besides, it does not permit much speed of travel. An insuperable objection to such forms of substitute for snow is that the moment they are exposed to rain or moisture, as would be the case in outdoor use, the chemicals are dissolved. Soaps, greases, oils, et cetera, have the obvious objection of soiling the clothes of the skier and generally being messy. Another objection is that most of these ingredients do not have a sufficiently low coefficient of friction in the first place.

Since a successful artificial ski surface must be capable of outdoor use where it is subjected to changes in heat, cold and moisture, it is essential that such changes do not adversely affect

the skiing qualities, such as speed, steering, et cetera. Also where the ski surface is to be subjected to any considerable use, the ski surface must be maintained as slippery as possible; that is, have a low coefficient of friction in order not only to insure speed but in order to prolong the life of the material.

Experience has shown that a structure like or similar to the usual floor rug or doormat produces a surface, which, besides having a high coefficient of friction thereby slowing up travel, permit side slip of the ski, due to their stiffness and other factors, thereby destroying the control of direction. Further, it was found by experience that the usual door mat structure increased its coefficient of friction with change of temperature or change in moisture content.

In carrying out my invention, I employ a fibrous vegetable material, such as flax fiber, hemp, manilla, sisal, or the like, in the form of a long pile or nap, as a skiing surface, with the fibers anchored integrally or as a part of a woven or fabric base, as more particularly set out hereinafter.

By way of illustration:

Fig. 1 represents the application of the invention to a ski hill, although, obviously, it may be employed on level or rolling ground, depending on the extent of the artificial surface employed and the place where it will be used.

Fig. 2 is a section extending longitudinally beneath the ski, illustrating how the pile is depressed in the forward progress of the ski.

Fig. 3 is a section transverse to the line of travel of a ski, illustrating how the ski, in depressing a portion of the pile, meets lateral resistance from the immediately upstanding lateral and contiguous portions of the pile to permit steering of the ski.

The essence of the invention resides in the proper preparation of a pile of suitable fibers, having suitable characteristics to permit the ski sufficiently to sink into the pile; and, in sliding over the pile, to meet with the necessary lateral resistance from the undepressed portion of the pile as to enable the ski to be guided in much the same way as it is guided in snow, under the impulse of the skier.

Steering in skiing is dependent on the skis sinking only sufficiently into the snow whereby lateral resistance is offered to the skis to prevent side-slip. That is why snow differs from ice. Ice offers no lateral resistance. In skating the runners of the skate cut into the ice so that the lateral motion necessary for side-slip is provided

and motion of the skate is in a forward direction and not sideways. Such is the principle underlying skiing to a very large extent. In addition thereto a slippery surface must be provided which has a coefficient of friction between the bottom of the skis and the fibers, substantially equal to that between the bottom of the skis and the snow, or at least wherein the coefficient of friction is substantially no more than that offered by the snow. It is also essential that this surface shall not be affected by temperature changes or by moisture.

Referring to the drawing, A indicates the base or mat of this ski surface, which base may be woven or otherwise constructed to offer an anchorage for the pile of fiber, indicated at 2. This fiber, or nap, or pile 2, in practice, is preferably composed of sisal fiber because of its availability for use in manufacturing cordage. The fibers 2 are interwoven with the warp and woof of the base A, which latter must, of course, provide the required strength and strain to a manufacture of this sort. The nap or pile 2 consists of long, closely woven fibers of such length as for them to assume a natural incline with relation to the surface as contradistinguished from stiff upstanding fibers, whereby the skis, as they slide over the ski surface, contact a substantial length of said fibers along the length of the gain of the fibers. At the same time, as the skis sink in and compact the fibers beneath, the skis are laterally resisted by the adjacent upstanding or uncompressed fibers so that the skis cut a path into the surface to permit steering very much as the ski would sink into the new fallen snow which had already been deposited on hard packed or settled old snow.

Thus it is seen that this ski surface closely simulates a snow surface suitable for skiing, and permits a person using this artificial ski surface to steer and make the many swings, turns, and maneuvers peculiar to this sport.

A mat with its fibrous skiing surface may be made in any length or width desired, even up to hundreds of feet in length, such as would be used on a skiing field or ski hill, as illustrated in Fig. 1. Straw, excelsior, or any other suitable material may be laid under the mats in order to cushion falls; this being particularly desirable when the underneath ground is rough or when novices are being taught the rudiments of skiing. Such a straw cushion is illustrated in the drawing at 3.

Jumps, including the take-off and landing, may be built and covered with this artificial ski surfacing. Courses for "Slalom" skiing may be laid out zigzag fashion on a hillside with the turns banked in simulation of winter skiing. In fact, the invention presents opportunity for skiing under practically all conditions except cross-country or long distance racing and travel.

An advantageous feature of this artificial skiing surface is that it is not necessary to use lubricants of any nature, such as wax or shellac, on the bottoms of the skis or on the fibers, since the fibers themselves contain a certain amount of natural vegetable oil and this maintains the fiber in a slippery condition.

Experience shows that this skiing surface does not change its coefficient of friction either by temperature or moisture. On the other hand, the skiing qualities of snow vary with the temperature or when rained upon. If the temperature is too warm the snow sticks to the skis and the going is hard. If the temperature has been warm and then turns cold an ice crust forms on the top of the snow and becomes too slippery and hard to permit steering as the skis cannot break through the crust. In freshly fallen snow the skis sink in too deep and one has to wait until the snow packs.

Experience shows that this artificial skiing surface is equal, if not superior, to snow, in that it provides a uniform quality of skiing surface regardless of season or weather conditions.

What I claim is:

A woven skiing surface comprising a base and pile of fibres firmly anchored in said base, the fibres having the characteristics of sisal, the spacing of the fibres projecting from the base being such as to allow the upper portions of the fibres to be bent over and pressed down so that a surface is presented which is sufficiently yielding to permit a ski to sink at least its depth into and below the free ends of the fibres, and the length of the fibres being sufficient to permit them to bend over in the direction in which the ski is traveling to present a surface which accelerates longitudinal skiing movement while at the same time resisting lateral movement of the ski to permit directional control.

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