May 6, 1969 A. F. SPILHAUS 3,442,522

METHOD OF SKATING AND APPARATUS FOR PRACTICING SAID METHOD

Filed May 31, 1966 Sheet 1 of 2

FIG. 1

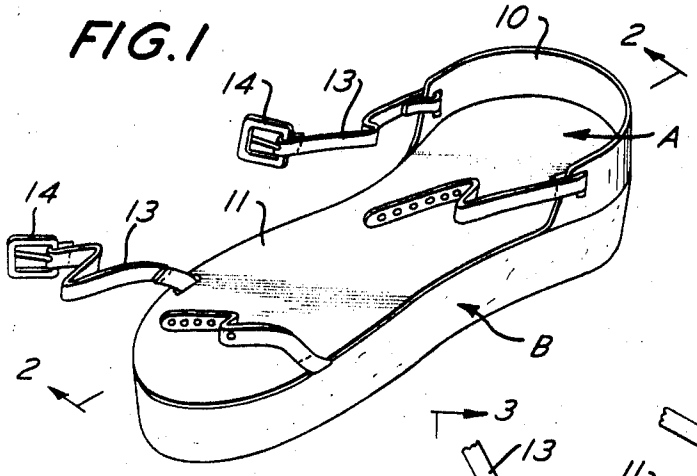


FIG. 2

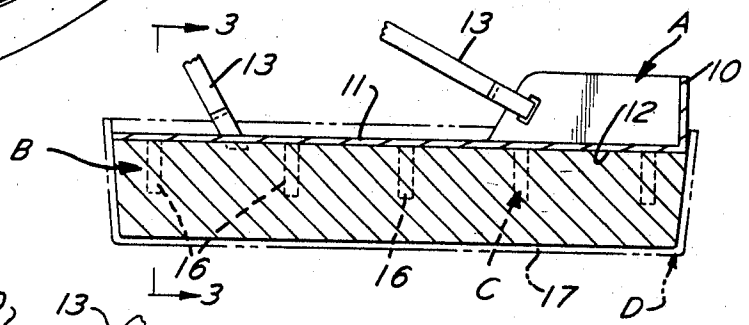
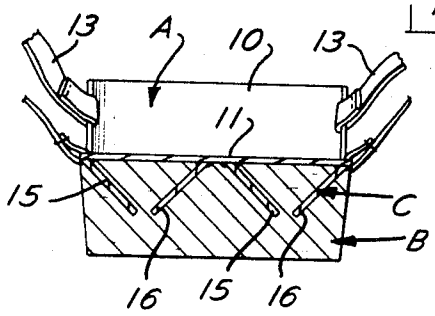


FIG. 3



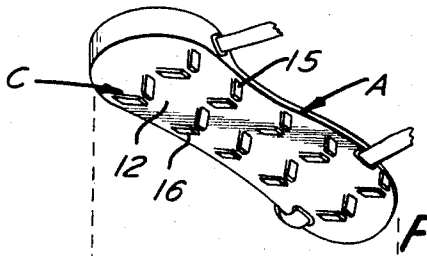
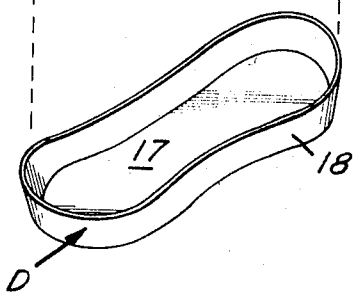


FIG. 4



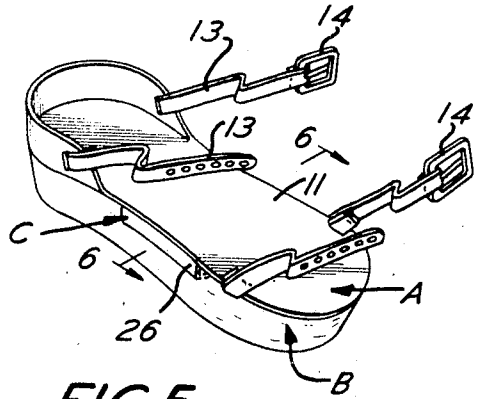


FIG. 5

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METHOD OF SKATING AND APPARATUS FOR PRACTICING SAID METHOD

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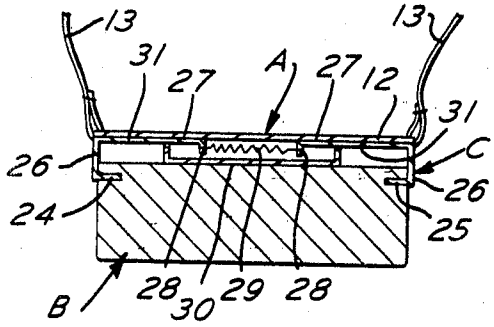


FIG.6

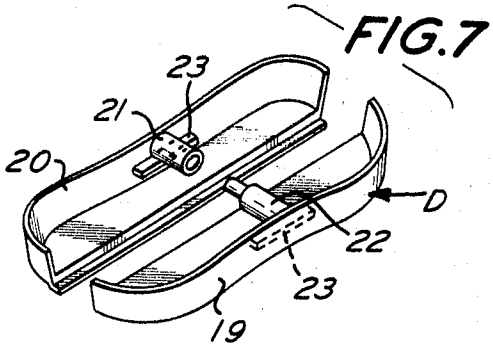
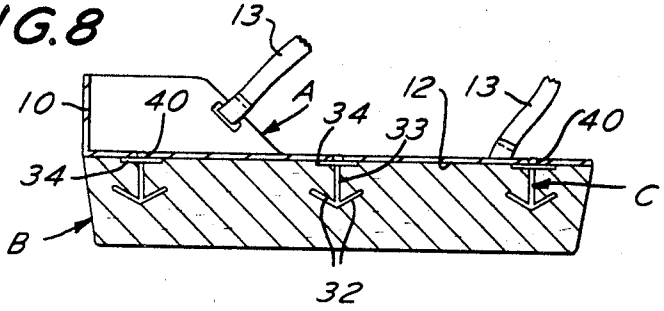


FIG.7

FIG.8



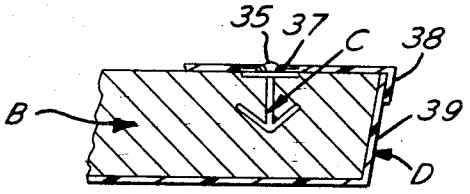
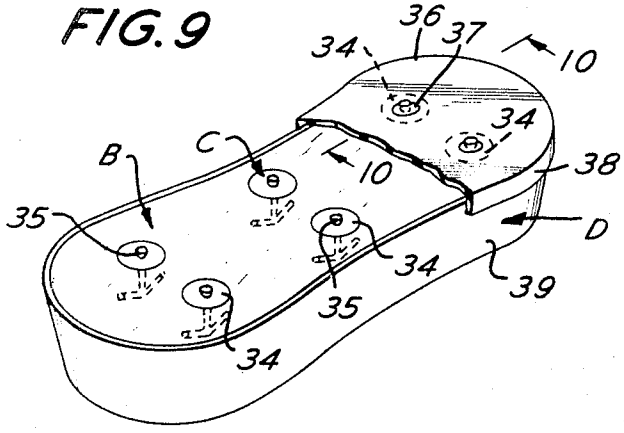


FIG.10

FIG.9



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METHOD OF SKATING AND APPARATUS FOR PRACTICING SAID METHOD

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U.S. Cl. 280—11.1 10 Claims

ABSTRACT OF THE DISCLOSURE

A method of (and apparatus for) skating on an essentially planar horizontal surface which involves strapping to each foot of the wearer an ice-holding shoe whose lower surface is fixedly connected to a contoured piece of ice which also has its lower surface in an essentially planar form. By moving the feet of the wearer in any desired direction, skating on any desired horizontal surface is effected.

This invention pertains to a method of skating, to skates and to apparatus useful in connection with said method. More particularly it pertains to an imaginative form of ice skating and to ice skates which embody the invention.

Ice skates are well known in the prior art. Such skates generally embody wooden or steel runners which contact a planar ice surface. Since the coefficient friction between the ice and the skate is relatively low, it is possible to achieve a gliding effect with the application of small forces. A widely held theory indicates that the reduced coefficient friction is caused by a thin film of water which exists between the skate and the ice when, under pressure, the melting point of the ice is elevated to ambient temperatures.

I am aware, however, of no prior art pertaining to ice skating which does not postulate the existence of a large planar ice surface (e.g. a frozen lake, a rink, etc.). My method of skating utilizes the low coefficient of friction between ice and other materials but harnesses this coefficient by providing portable foot-attached pieces of contoured ice with which one may skate upon a surface made of any relatively smooth material and with which one is not limited to skating upon ice surfaces.

As used henceforth herein, the word "ice" is intended to mean a solid phase form of a liquid or solution which solid phase is capable of existence at ambient temperatures and at atmospheric pressure. Since, in all probability, the ice will be formed by the users of the invention in commercial and readily available refrigeration apparatus (e.g. a home freezer) it is preferred that the material from which the ice is made be a readily available non-toxic liquid. While water is the most readily available of such liquids, the invention is not restricted to ice formed therefrom.

It is accordingly an object of this invention to provide a method for skating on ice wherein the large planar surface upon which a user skates need not necessarily be ice and where, instead, ice is provided which moves with the skater.

Additionally, objects of the invention include providing skates which utilize the methods of the invention and apparatus for forming the contoured ice used in connection with such skates.

It is also an object of the invention to provide skating devices and apparatus which have great play value for children and which can be used on sidewalks, pavements, playground surfaces, and other similar non-frozen recreational areas at all times of the year.

Still another object of the invention is to provide a novel mold for forming ice useful in connection with the invention and to provide various novel means of attaching ice to foot-receiving portions of the skate.

Other objects of the invention are to provide skating apparatus of the character described which is rugged in construction, economical to produce, efficient in operation, has an indefinite life and which utilizes a method of skating not heretofore practiced.

These other objects of the invention will be apparent to those skilled in the art from the following description when read in conjunction with the accompanying drawings, wherein like reference numerals designate like parts, and in which:

FIGURE 1 represents a perspective view of first skate embodying the invention as it would appear when ready to be used.

FIGURE 2 represents a section taken on line **2—2** of FIGURE 1 and modified by the addition thereto of an ice mold which is removed prior to utilization of the skate.

FIGURE 3 represents a section taken on line **3—3** of FIGURE 2, modified by removal of the mold shown in FIGURE 2.

FIGURE 4 represents an exploded view of the skate and mold shown in FIGURES 1 to 3 inclusive shown as it would appear before filling of the mold.

FIGURE 5 represents a perspective view of a second skate embodying the invention which can be used in the practice of the methods thereof.

FIGURE 6 represents a section taken on line **5—5** of FIGURE 5 and particularly shows self-adjusting resilient means for clamping ice to the foot-receiving portion of the skate.

FIGURE 7 represents a perspective view of a mold suitable for forming contoured pieces of ice used in conjunction with the embodiment of the invention shown in FIGURE 5.

FIGURE 8 represents a section taken through a third skate embodying the invention.

FIGURE 9 represents a perspective view, partially cut away, of a mold and jig used for making contoured pieces of ice suitable for use in connection with the embodiment of the invention shown in FIGURE 8.

FIGURE 10 represents a fragmentary section taken along line **10—10** of FIGURE 9.

Briefly stated, the skate of the invention comprises a pedal or foot-receiving portion A, upon which a piece of contoured ice B is mounted and retained by various retaining means C. However, in order to practice the invention on a continuing basis it is expedient to provide a mold D which is used for the production of contoured ice pieces B. The particular skates and molds shown are merely illustrative of many structures which can be used for practicing the method of the invention.

Considering now the embodiments shown in FIGURES 1 to 4 inclusive, it will be observed that the pedal or foot-receiving portion A comprises a heel retainer **10**, an insole **11**, and a sole **12**. Means, such as a plurality of straps **13** and buckles **14**, are provided for retaining the pedal receiving portion A on a foot. The embodiment shown is suitable for receiving either a bare or a shod foot and obviously, as in the case of ordinary ice skates, a complete shoe constitutes a structure which is functionally equivalent to the pedal portion which has been described up to this point. Dependent from the sole **12** are a plurality of ice retainers C which, in this embodiment, take the form of a plurality of paired tabs, each pair including a tab **15** and a tab **16**. These tabs may be of any configuration which will tend to mechanically "key" and retain crystalline ice as it forms thereabout. The piece of ice B, which is generally contoured to conform (in plan view) to sole **12** is formed in a mold

D, having a bottom **17** and side walls **18**. The height of side walls **18** is such that they extend above the level of insole **11**, as best shown in FIGURE 2. The mold is preferably made of resilient material which will facilitate release of the piece of ice B therefrom. Various plastics, for example, including high density polyethylene, polypropylene, polyesters etc., which are slippery in nature are ideal since they can be flexed to effect the release of their contents although, the same effect can be achieved with resilient metals and with other corrosion-resistant materials. It is preferred, though not necessary, that the perimeter of sole **12** frictionally engage the interior of walls **18**.

In order to use the skate shown in FIGURES 1 to 4 inclusive, the mold D is filled with water to a suitable level and, thereafter, portion A is fitted into the mold, as shown in FIGURE 2, so that retainers C are immersed in water and so that the water contacts sole **12**. The entire assembly is then placed into a freezer until a piece of contoured ice B is formed. Once this has occurred, the skate is removed from the freezer, and the mold D is removed. In order to practice the method of the invention, it is necessary merely to place one's foot in portion A and, utilizing straps **13** and buckles **14**, thereby mount the piece of ice B in fixed relationship thereto. When one thereafter stands on the large planar surface upon which one desires to skate, a surface of the ice is placed in juxtaposition to that surface and thereby reduces the coefficient of friction with respect thereto, making it possible to minimize propellant forces.

The skate can be used until the bottom surface of block B has melted to the point where tabs **15** and **16** are exposed. In order to avoid damage to the surface being skated upon, it is preferable that the tabs be made of non-marring material such as a resiliently deformable plastic. Adhesion of ice to the tabs can be increased by providing the tabs with serrated edges.

The embodiment of the invention shown in FIGURES 5 to 7 inclusive utilizes the same principles and, consequently, contains the same major portions. Therefore only the specific differences in construction will be discussed and not those elements which are common among the embodiments.

The mold D, which is shown in FIGURE 7, is longitudinally split into a first half **19** and a second half **20**. The abutting edges of the halves are contoured so as to mate in water-tight juxtaposition. Half **20** is provided with a female lug **21** and half **19** is provided with a lug **22** having a male projection. When halves **19** and **20** are brought together, the male lug **22** is frictionally engaged within female lug **21** to assure registration and to keep the halves together. Each of the lugs is provided with similar tabs **23** which extend longitudinally on each side of the lugs. It will be readily apparent that when the mold shown in FIGURE 7 is closed, filled with water, and frozen, the piece of ice B which is created will contain orifices which have a shape determined by lug **21**, lug **22**, and tabs **23**. The use of these undercut orifices will become apparent in connection with the discussion of FIGURES 5 and 6.

The retaining means utilized in this embodiment comprises a spring-loaded clamp which is best seen in FIGURE 6. The clamp includes inturned projections **24** and **25** which register with and fit into the voids in block B created, inter alia, by tabs **23**. The clamps further include vertical portions **26** and sole portions **27** which terminate in paired spaced-apart spring retainers **28**. Attached to retainers **28** is a spring **29** which resiliently urges retainers **28** into juxtaposition and which, consequently, urges projections **24** and **25** toward each other. As shown in FIGURE 6, the force of spring **29** is overcome by virtue of the interposition of the piece of contoured ice B between projections **24** and **25**. However, as the ice melts the projections will move toward each other and thus remain in compressive contact with the melting ice.

Retainer C further includes a U-shaped bracket **30**, mounted on sole **12**, through which horizontal clamp portions **31** pass and are slidably received. This bracket also serves to keep the block B in fixed vertical spaced relationship to pedal portion A and is contoured to form a protective housing for spring **29**. Greater stability can be achieved by making bracket **30** co-extensive in length with block B.

Before turning to the final embodiment of the invention, shown in FIGURES 8 to 10 inclusive, it might be well to indicate that while all ice blocks B, which have been illustrated, are generally co-extensive with pedal portion A this is not a necessary element of the invention. Greater stability, albeit a clumsier skate could be effected by making the blocks larger than the portion A. Further, they need not be made of a single block but can be made of a plurality of blocks of the same or different shapes spaced about the sole portion. It is believed that for the average user, having average skills and average athletic abilities, the design shown will make for easiest operation, place minimum stresses on the ankle and thus make the skating method more comparable, in terms of athletic demands, with roller skating than with ice skating. However, embodiments including blocks shaped like runners, akin to ice skate runners, are within the scope of the invention.

In the embodiment shown in FIGURES 8 to 10 inclusive, the differences compared to prior embodiments relate to the mold for forming the block B and to the retaining means C.

A plurality of anchors C are used in this embodiment each of said anchors including arms **32**, a shank **33** and an anti-wobble plate or disc **34**. Affixed atop disc **34** is a male snap member **35**, and the snap may be integral with shank **33**. The anchors may be made of any suitable material but it is preferred to use a non-marring plastic just as in the case of tabs **15** and **16** since, like the tabs, these anchors will be exposed once the block of ice has melted and at that time can contact the surface being skated upon.

The anchors are frozen into the block of ice B as shown in FIGURE 9 so that the disc **34** is flush with the top of the ice and male snap member **35** protrudes above the surface. This is achieved by the use of a jig or template **36**, a fragment of which is shown in FIGURE 9. This template is provided with a plurality of apertures **37**, at predetermined locations, and these apertures serve to receive and releasably retain snap members **35**. Consequently, anchors C may be inserted in the holes in the template and made dependent therefrom. The mold D is then filled with water and the template **36**, now containing dependent anchors, as shown in FIGURE 10, is mounted with its lip **38** being supported by walls **39** of the mold D. After the water has frozen, the template **36** can be detached and removed both from the mold D and from the anchors C (e.g. members **35** are withdrawn from apertures **37**). This leaves a contoured block of ice from the top of which protrude a plurality of pre-positioned snap members **35**. The pedal portion A shown in FIGURE 8 is provided with a plurality of orifices **40**, in sole **12**, which are located in exact registration with the orifices in template **36**. Consequently, members **35** snap-fit into orifices **40** and thereby secure block B in juxtaposition to sole **12**.

It is obvious that with the embodiments shown in FIGURES 5 to 10 inclusive, blocks B can be formed in advance and a reserve supply thereof created. Consequently, skating for a long period is possible. On the other hand, in the embodiment shown in FIGURES 1 to 4 inclusive each time the block B melts the entire apparatus must be placed into a freezer and taken out of use until a new block has been formed.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a method of skating, wherein friction is reduced

between a foot and a substantial horizontal surface to be skated upon, the steps of:

(a) providing a piece of contoured ice,

(b) releasably securing said piece of ice in fixed relationship to a foot for movement of said ice in unison therewith,

(c) placing a surface of said piece of ice in juxtaposition to the planar surface, and

(d) moving said foot of said piece of ice in unison in any desired direction on said surface.

2. The method of claim 1 wherein said piece of ice is contoured to the general configuration of the sole of a foot.

3. A skate comprising

(a) means adapted to be releasably secured to the sole of a human foot

(b) a contoured piece of ice

(c) means on said (a) means for retaining said piece of ice in fixed position beneath said (a) means for enabling movement of said piece of ice in unison with said (a) means in any direction on a substantially planar surface.

4. The skate of claim 3 wherein said retaining means are dependent from said foot-receiving means and portions thereof are encapsulated in said ice.

5. Apparatus for skating on ice comprising:

(a) a pedal portion including a sole

(b) means for retaining said pedal portion on a foot

(c) a mold, contoured in general conformity to the sole of said pedal portion, and adapted to retain a freezable liquid therein and release the same after it has become ice, and

(d) means for retaining the piece of ice, formed in said mold, on said pedal portion.

6. The apparatus of claim 5 wherein said ice retaining means are dependent from said pedal portion and extend into said mold when said pedal portion is mounted in contact therewith.

7. The apparatus of claim 5 wherein portions of said ice retaining means are positioned within said mold so as to be encapsulated in the ice made therein, and other portions of said ice retaining means extend outside of said mold and wherein, further, said pedal portion includes means for releasably receiving said latter ice retaining means portions.

8. The apparatus of claim 5 wherein said ice retaining means comprises a clamp mounted on said pedal portion and wherein, further, said mold includes means for providing apertures in a piece of ice cast therein, which apertures are adapted to receive portions of said clamp.

9. A skate comprising:

(a) means for receiving a foot,

(b) a contoured piece of ice,

(c) means for retaining said piece of ice in fixed position beneath said foot-receiving means, a portion of said retaining means being imbedded in said ice and the balance of said retaining means being releasably attached to said foot-receiving means.

10. A skate comprising:

(a) means for receiving a foot,

(b) a contoured piece of apertured ice, and

(c) means including a clamp dependent from said foot-receiving means for retaining said piece of ice in fixed position beneath said foot receiving means, said apertures in said ice being adapted to receive portions of said clamp.

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U.S. Cl. X.R.

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