

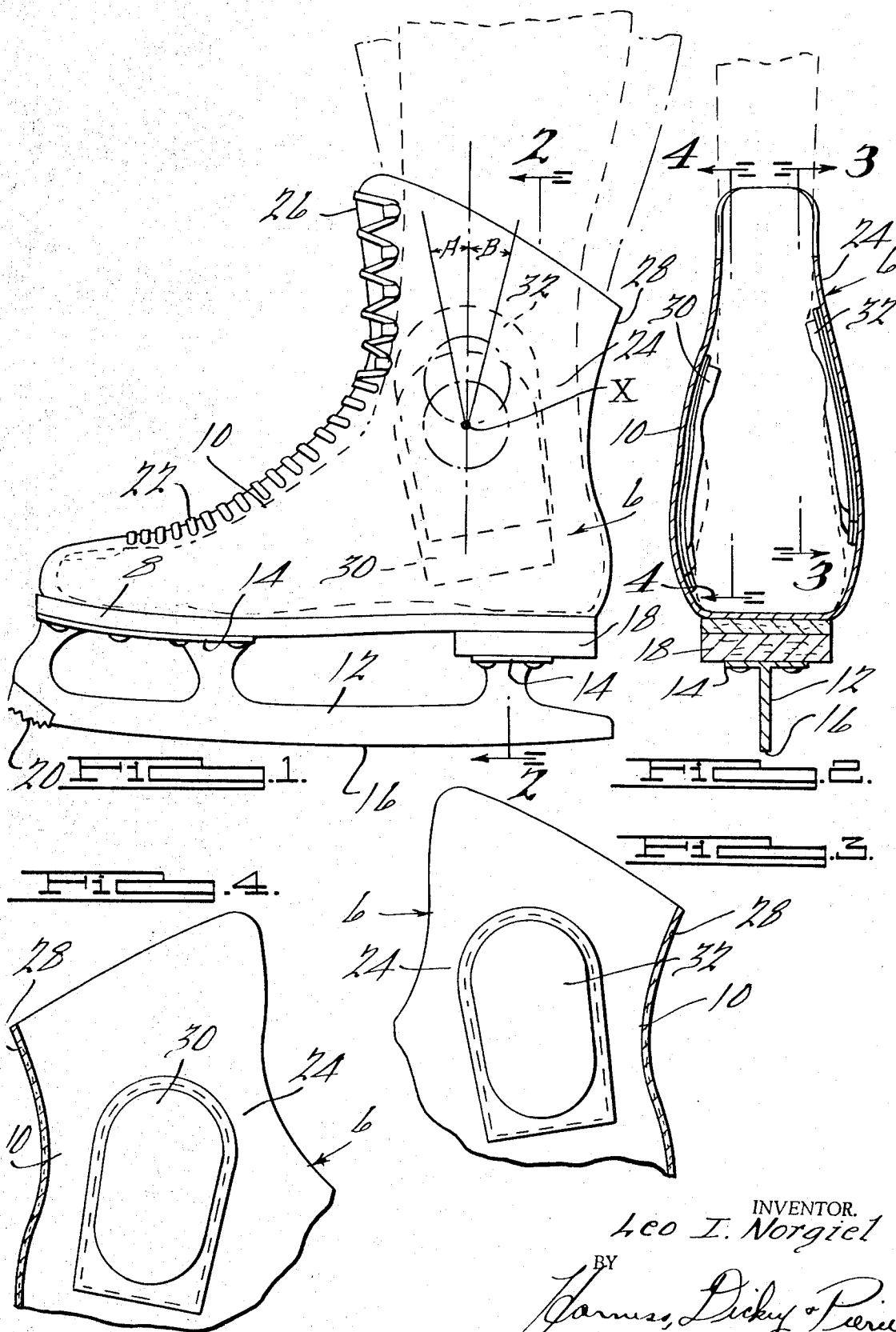
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ICE SKATE

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3,537,716
ICE SKATE

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ABSTRACT OF THE DISCLOSURE

An ice skate including an ankle boot and a skate blade affixed to the sole of the boot, wherein the ankle section of the flexible upper of the boot is flared forwardly and rearwardly and the inner surfaces of the ankle section are adapted to clamp the ankle joint therebetween, providing for restricted pivoting movement of a person's leg relative to the ice skate.

BACKGROUND OF THE INVENTION

In figure skating, posture and poise of the skater are considered basic to provide a smooth rhythm of movement during the execution of an artistic series of arcuate and spiral skating patterns in a forward, as well as backward, skating position. The equilibrium of a skater is a key factor in assuring that the proper posture and poise are maintained throughout the execution of the various maneuvers and is particularly important during reversals from forward to backward skating positions, as well as during landing after execution of one or more jumps. Various blade and skating boot designs have heretofore been used or proposed for use to provide sufficient support for the skater's feet and ankles to assure maintenance of the proper degree of equilibrium in order to facilitate the execution of artistic skating maneuvers.

An inherent deficiency which has been present in the various ice skate designs heretofore used has been the inadequate side support of a skater's ankles and the general rigidity of the boot, preventing free pivoting movement of the skater's legs about the ankle joint, whereby a disruption in the skater's equilibrium is produced with an attendant reduction of the skater's poise and grace during the execution of a skating maneuver. In many instances, skate boots are provided with relatively high heels such that the skating edge of the ice skate blade is disposed at an acute angle relative to the sole of a skater's foot. This arrangement, during backward skating, produces a sensation of falling forward, causing the skater to lean forward, detracting from his ability to accelerate his skating speed and, in some instances, causing him to fall over backwards. On the other hand, the restricted pivoting movement of a skater's ankle occasioned by boot designs of the type heretofore known, coupled with inadequate transverse ankle support, has prevented a skater, while in a forward skating position, from achieving optimum thrust during acceleration of speed and also an interference with the skater's equilibrium.

The foregoing problems and disadvantages of ice skates of the types heretofore known are overcome in accordance with the present invention wherein the geometry of the sole of the boot and the skating edge of the blade are controlled and whereby improved lateral support is provided to the skater's ankle, while concurrently enabling restricted pivoting movement of the leg relative to the ankle joint, enhancing a skater's equilibrium with a concurrent improvement in the skater's posture and poise during the execution of artistic skating maneuvers.

SUMMARY OF THE INVENTION

The benefits and advantages of the present invention are achieved by an ice skate consisting of an ankle boot and an ice skate blade affixed to the sole of the boot in which

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the skating blade is disposed substantially parallel to the plane of the sole of the boot, and wherein the flexible upper of the boot in the section surrounding the ankle is flared upwardly and outwardly along the forward and rearward portion thereof to provide for restricted pivoting movement of a skater's leg, and wherein the inner surfaces of the ankle section of the upper is formed with engaging pads for remotely clamping a skater's ankle joint therebetween.

Other benefits and advantages of the present invention will become apparent upon a reading of the description of the preferred embodiments taken in conjunction with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a side elevational view of an ice skate adapted to be worn on the left foot of a skater constructed in accordance with the preferred embodiments of the present invention;

FIG. 2 is a transverse vertical sectional view of the ice skate shown in FIG. 1, as viewed substantially along the line 2—2 thereof;

FIG. 3 is a fragmentary enlarged vertical sectional view of one inner side of the ankle section of the flexible upper of the ice skate boot as shown in FIG. 2, and taken substantially along the line 3—3 thereof; and

FIG. 4 is a vertical fragmentary sectional view of the opposite inner side of the ankle section if the ice skate shown in FIG. 2, and taken substantially along the line 4—4 thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now in detail to the drawing, an ice skate is illustrated which is adapted to be worn on a skater's left foot and consists of an ankle boot or shoe 6 including a sole 8 and a flexible upper 10 affixed thereto, which may be of leather or plastic, and is contoured so as to removably receive a skater's left foot, as indicated in phantom. An ice skate blade 12 is securely fastened such as by means of mounting plates 14 to the underside of the ankle boot and is formed with an elongated skating edge 16 extending substantially longitudinally thereof. The ankle boot 6 is formed with a heel portion 18 at the rearward end of the sole 8 and in accordance with the construction of the present invention, the plane of the inner surface of the sole 8 is disposed substantially parallel to the skating edge 16.

The configuration of the ice skating blade 12, as illustrated, is typical of one employed in figure skating and is conventionally provided with a plurality of serrations or teeth 20 along the toe portion thereof which are employed for engaging the ice as the skate blade is rocked onto its toe for the purpose of facilitating stopping and the execution of skating figures. It will be understood that the present invention is also applicable to other ice skate blade configurations, including those conventionally employed for racing and for hockey, as well as the figure skate blade illustrated in the drawing.

The upper 10 of the ankle boot is formed along the instep portion thereof with a lacing 22, which conventionally may include eyelets and cleats for lacing the boot about a skater's foot and ankle in the conventional manner. The ankle section 24 of the flexible upper of the boot is formed with an upper outwardly tapered configuration or flare including a forwardly tapered front portion, indicated at 26 in FIG. 1, and a rearwardly tapered rear portion, indicated at 28. The forward portion of the flexible upper in the region adjacent to the instep, as well as the heel portion of the flexible upper, are adapted to snugly overlie and support a skater's foot, preventing in-

advertent longitudinal movement of the skater's foot within the ankle boot.

The forward tapered portion 26 and rearwardly tapered portion 28 commence at a point corresponding substantially to the axis of pivoting movement as defined by the ankle joint which is indicated at X in FIG. 1. The angularity of taper of the forward portion and rearward portions 26, 28, respectively, can range from about 5° to about 15° from the vertical and is preferably controlled within about 10° to about 12°. The forward taper of the forward portion 26 is indicated by angle A in FIG. 1, while the angle of rearward taper of the rearward portion 28 is indicated by the angle B. The forward and rearwardly tapering configuration of the ankle section 24 of the flexible upper enables pivoting movement of the foot and leg of a skater through an angular increment corresponding to the sum of angles A and B before contact is made by the forward or rearward portion of the leg with the tapered portions 26 and 28.

Firm lateral support, of the skater's foot and ankle is provided by the ankle section 24 of the flexible upper, which is provided on the opposed lateral inner surfaces thereof with a pad 30 disposed in supporting bearing contact against the outer side portion of the ankle bone and a pad 32 affixed to the opposite inner surface disposed in bearing supporting contact against the inner projecting portion of the ankle bone. As will be noted in FIGS. 2-4, the inner pad 32 is disposed in a position slightly vertically above the position of the outer pad 30 consistent with the disposition of the opposed sides of the ankle joint to provide optimum support and facilitate pivoting movement of the leg relative to the foot. The pads 30, 32 may be of any suitable resilient material, such as a leather-covered foam rubber, to enable partial embedment of the projecting portion of the ankle bone therein so as to conform with the contour of the ankle bone, thereby enhancing the support of a skater's foot.

It will be apparent from the foregoing description that the ankle boot of the ice skate provides for firm lateral support of each skater's foot while enabling substantially unrestricted pivoting movement of the skater's legs relative to his feet forwardly and rearwardly from a vertical axis of from 5° to 15°, and preferably 10° to 12°, whereafter further pivoting movement is resiliently restrained by the flexibility of the flexible upper.

While the invention has been described with particular reference to a skate adapted to be worn on the left foot of a skater, it will be understood that the same principles are applicable to a skate to be worn on a skater's right foot, wherein the pads 30, 32 are reversed such that the inner pad is positioned vertically above the outer pad consistent with the conformation of the skater's ankle joint.

While it will be apparent that the invention herein disclosed is well calculated to achieve the benefits and ad-

vantages above set forth, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claims.

What we claim is:

1. In an ice skate, the combination including an ankle boot comprising a sole and a flexible upper affixed thereto and formed to removably receive a person's foot, and an ice skate blade having a skating edge affixed to the underside and extending longitudinally of said boot, said flexible upper including an upwardly opening ankle section adapted to encircle the lower portion of a person's leg and ankle joint, said ankle section provided with a pad on each of the inner transverse surfaces thereof and positioned to overlie and clamp a person's ankle joint therebetween, said ankle section of said upper formed with an upwardly extending taper and the forward and rearward portion thereof which are normally disposed in clearance relationship relative to a person's leg to enable unrestricted pivoting movement of a person's leg about the ankle joint through an angular increment forwardly and rearwardly of the vertical axis of said ankle section before contacting and yieldably engaging said forward or rearward portions.

2. The ice skate as described in claim 1, wherein said skating edge is disposed substantially parallel to the inner surface of said sole.

3. The ice skate as described in claim 1, wherein said taper of said forward and said rearward portions of said upper is of an angularity ranging from about 5° to about 15° from the vertical axis of said ankle section.

4. The ice skate as described in claim 1, wherein said taper of said forward and said rearward portions of said upper is of an angularity ranging from about 10° to 12° from the vertical axis of said ankle section.

5. The ice skate as described in claim 1, wherein said pad adapted to be disposed in overlying clamping relationship on a person's inner ankle bone is positioned vertically above the other said pad adapted to be disposed in overlying clamping relationship on a person's outer ankle bone.

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