UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

GLENN SAKCRISKA,
an Individual,

Plaintiff,

vs.

FLEMING GRAY LIMITED, an Ontario, Canada Corporation,

Defendant.
_____/

Case No. 03-74418
Hon. Victoria A. Roberts
Magistrate Judge Wallace Capel, Jr.

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& SCHWARTZ, P.C.
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_____/

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FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT, JURY TRIAL AND DAMAGES

PARTIES

Plaintiff, Glenn Sakcriska, as his Complaint against Defendant Fleming Gray Limited ("Fleming") alleges as follows:

1. Plaintiff Glenn Sakcriska is an Individual residing in Ypsilanti, Michigan, Washtenaw County, State of Michigan.

2. Defendant Fleming Gray Limited ("Fleming") is an Ontario, Canada corporation doing business in Michigan and conducting the acts of infringement complained of in the State of Michigan within this district.

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JURISDICTION AND VENUE

3. This Court has jurisdiction pursuant to 28 USC §§ 1331 and 1338 over this infringement action, which arises under the patent laws of the United States Code, and in particular, 35 USC §§ 271, 281, 283, 284 and 285.

4. On information and belief, Fleming does business in the state of Michigan and in this district. Venue is proper in this Court pursuant to 28 USC §§ 1391 and 1400.

THE PATENT-IN-SUIT

5. On August 11, 1998, United States Letters Patent No. 5,791,974, entitled DEVICE AND METHOD FOR CONTOURING ICE SKATE BLADES ("the '974 patent"), duly and legally issued. The patent is valid and subsisting. **Please see Exhibit A.**

6. Plaintiff owns all right, title and interest to the '974 patent.

7. On April 27, 1999, United States Letters Patent No. 5,897,428, entitled DEVICE FOR CONTOURING AND SHARPENING ICE SKATE BLADES ("the '428 patent"), duly and legally issued. The patent is valid and subsisting. **Please see Exhibit B.**

8. Plaintiff owns all right, title and interest to the '428 patent.

9. On September 3, 2002, United States Letters Patent No. 6,443,819 B2, entitled DEVICE FOR DRESSING GRINDING WHEELS ("the '819 patent"), duly and legally issued. The patent is valid and subsisting. **Please see Exhibit C.**

10. Plaintiff owns all right, title and interest to the '819 patent.

PATENT INFRINGEMENT

11. Fleming has been and still is infringing the '974 patent, '428 patent and/or the '819 patent in this judicial district and elsewhere, by making, importing, offering for sale, selling, and/or using devices and know how for contouring and sharpening ice skate blades, as well as devices for dressing grinding wheels, and practicing the methods of contouring ice skate

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blades, which embody the patented inventions, and will continue to do so unless enjoined by this court. Specifically, Fleming has manufactured, imported, offered for sale, sold and/or used devices for contouring and sharpening ice skate blades and devices for dressing grinding wheels known as models B-3, NCSF, FG-2, FG-3, FG-4 Old Type 1 & 2, FG-7, FG-8, among others, thereby infringing the '974, '428 and '819 patents, and will continue said infringement.

12. Upon information and belief, Fleming manufactures, imports, offers for sale, sells and/or uses other models of devices for contouring and sharpening ice skate blades not specifically identified which infringe the '974, '428 and '819 patents.

13. Upon information and belief, Fleming also infringes the '974, '428 and '819 patents as a contributory infringer and by active inducement of infringement.

14. Upon information and belief, Fleming's acts of infringement have been and continue to be willful and wanton.

RELIEF REQUESTED

WHEREFORE, Plaintiff Glenn Sakcriska prays for relief against Fleming Gray Limited as follows:

1. Enter judgment that Fleming has directly infringed, has actively induced others to infringe and/or has contributed in the infringement of U.S. Letters Patent Nos. 5,791,974; 5,897,428; and/or 6,443,819 B2.

2. Enter judgment that said infringement was and continues to be willful and wanton;

3. Award Glenn Sakcriska damages adequate to compensate for past infringement by Fleming in the amount no less than a reasonable royalty, in a sum to be determined at trial, and that said damages be trebled in view of the willful and wanton nature of the infringement;

4. Enter a preliminary and permanent injunction against Fleming, its officers, agents, servants, employees and attorneys, and other persons in active concert or participation with Delphi, enjoining Delphi from further infringement of the '974, '428 and '819 patents;

5. Order Fleming to deliver to Glenn Sakcriska for destruction, all infringing products and systems in its possession;

6. Declare this case an exceptional case under 35 U.S.C. § 285, and award Glenn Sakcriska his attorney fees incurred in this action;

7. Award Glenn Sakcriska his costs of this action, interest on the award and other charges to the maximum extent permitted; and

8. Award Glenn Sakcriska any other relief as the Court deems just and proper under the circumstances.

DEMAND FOR JURY TRIAL

Plaintiff hereby demands a trial by jury herein.

Respectfully submitted,

SOMMERS, SCHWARTZ, SILVER & SCHWARTZ, P.C.

By: 

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DATED: November 5, 2003

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US005791974A

United States Patent [19]

Sakeriska

[11] Patent Number: 5,791,974

[45] Date of Patent: Aug. 11, 1998

[54] DEVICE AND METHOD FOR CONTOURING ICE SKATE BLADES

[76] Inventor: Glenn Sakeriska, 108 Maple St., Ypsilanti, Mich. 48195

[21] Appl. No.: 795,369

[22] Filed: Feb. 4, 1997

[51] Int. Cl.[6] B24B 1/00

[52] U.S. Cl. 451/45; 451/5

[58] Field of Search 451/45, 5, 185, 451/192, 205, 224, 383, 913; 76/82, 89.1, 89.2

[56] References Cited

U.S. PATENT DOCUMENTS

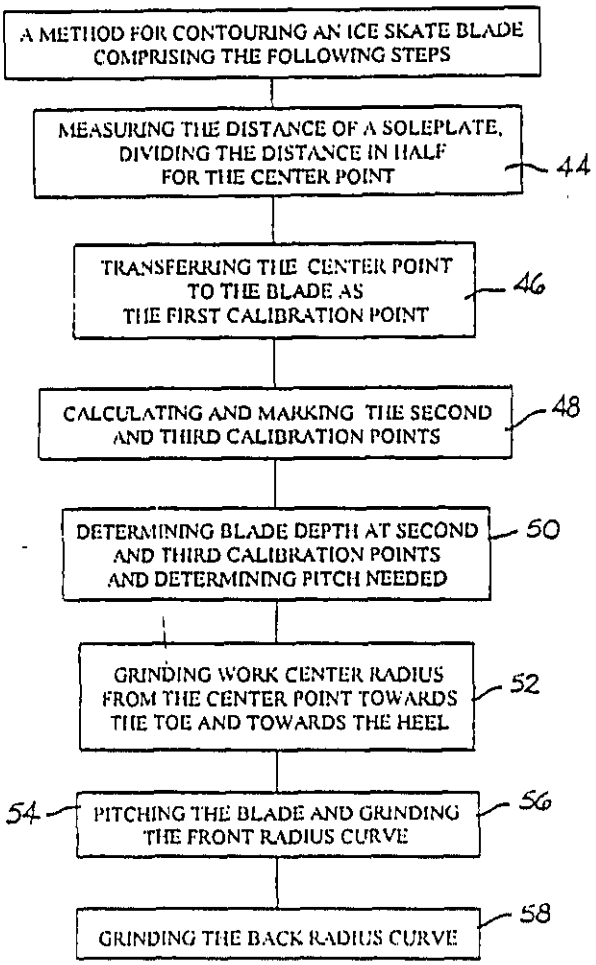
4,403,455	9/1983	Chiasson	451/383
5,009,039	4/1991	Lager et al.	451/383
5,195,277	3/1993	Courchesne	451/45
5,547,416	8/1996	Timms	451/45

Primary Examiner—Robert A. Rose
Assistant Examiner—George Nguyen
Attorney, Agent, or Firm—Barbara M. Burns

[57] ABSTRACT

A device and a method for contouring an ice skate blade. The method comprises the steps of measuring the overall length of the soleplate of the boot and calculating the center point of the soleplate, transferring the center point of the soleplate to the blade and marking the center point of the soleplate onto the blade as the first calibration point. A second and third calibration point, calculated as 25% of the soleplate length are marked from the first calibration point towards the toe and towards the heel of the blade. Toe and heel radius termination points are also marked. The device comprises a measuring tool for measuring the length of the soleplate and having calibration points and radii termination points preset on the device according to the soleplate length. The device therefore eliminates the calculation of all the calibration points and radii termination points each time an ice skate blade is to be contoured. The blade depths at the second and third calibration points are measured and the needed pitching is determined. The blade is ground based on the calibration points with some adjustments for the skate wearer's physique and skill level.

13 Claims, 3 Drawing Sheets



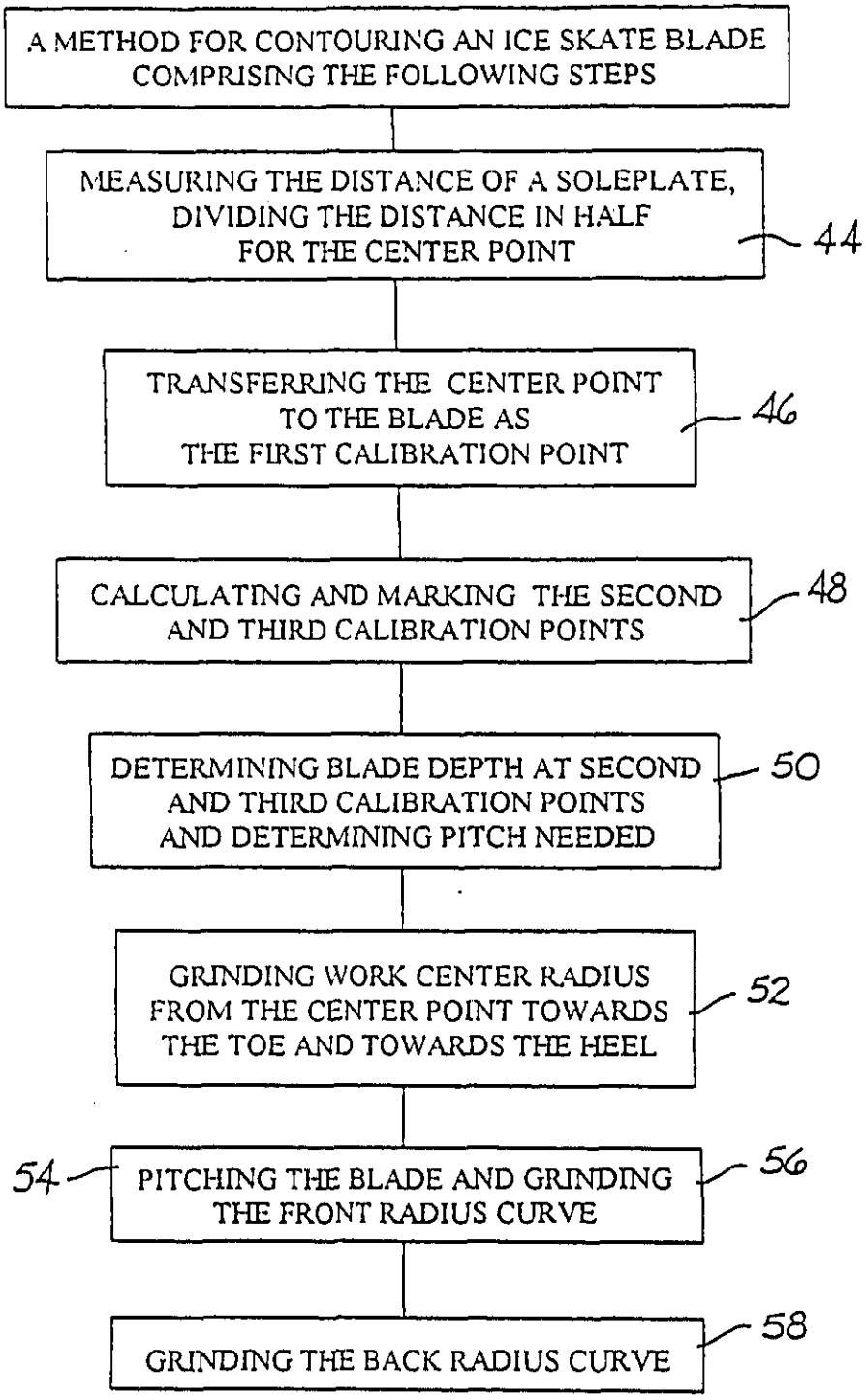

A METHOD FOR CONTOURING AN ICE SKATE BLADE COMPRISING THE FOLLOWING STEPS
MEASURING THE DISTANCE OF A SOLEPLATE, DIVIDING THE DISTANCE IN HALF FOR THE CENTER POINT
44
TRANSFERRING THE CENTER POINT TO THE BLADE AS THE FIRST CALIBRATION POINT
46
CALCULATING AND MARKING THE SECOND AND THIRD CALIBRATION POINTS
48
DETERMINING BLADE DEPTH AT SECOND AND THIRD CALIBRATION POINTS AND DETERMINING PITCH NEEDED
50
GRINDING WORK CENTER RADIUS FROM THE CENTER POINT TOWARDS THE TOE AND TOWARDS THE HEEL
52
54
PITCHING THE BLADE AND GRINDING THE FRONT RADIUS CURVE
56
GRINDING THE BACK RADIUS CURVE
58

FIG. 4

DEVICE AND METHOD FOR CONTOURING ICE SKATE BLADES

BACKGROUND OF THE INVENTION

The field of the invention pertains to ice skates. In particular, the invention pertains to a method for contouring the blade of an ice skate prior to sharpening the blade. In the past, contouring the blade has been accomplished by measuring the length of the blade or the boot, and grinding radii based on the center of the blade length or of the boot length.

However, the effect of a grinding a radius based on the center of the blade length or boot length causes difficulty because the length of the blade or the boot may not correlate to the physique of the wearer or to the purpose to be made of the ice skate. Thus, no known method exists to contour a skate and provide accurate positioning of radii on the blade to facilitate the wearer's ease and effectiveness of movement.

SUMMARY OF THE INVENTION

It is to a device and an improved method for contouring an ice skate blade to which the present invention is directed. Cam templates are employed to direct a cut for a specific radius on the main or work center radius curve of the blade. Other radii are imparted to the blade as will discussed hereinbelow. After the blade is contoured, the skate blade is then sharpened as is generally known.

Essentially, the invention comprises measuring the soleplate of the skate boot to which the blade is attached and using the soleplate length as the basis for calculating the necessary contouring. The soleplate length closely approximates the foot of the skate wearer. The soleplate length is halved and transferred to the blade and thereon marked as the first calibration point. Second and third calibration points are calculated as 25% each of the soleplate length and are respectively marked on the blade towards the toe and towards the heel from the first calibration point. Toe and heel radii termination points are also marked on the blade.

A measuring device having the various soleplate lengths and their collateral calibration points and radii termination points pre-marked thereon is useful for marking the blade. The use of the device obviates the calculation each time of the collateral measurements.

The blade is measured for depth at the second and third calibration points. The depth can be the distance from the edge of the blade to the top of the blade if the blade is exposed, or to the plastic blade support of some skates. An understanding of different skate manufacturers is extremely helpful here to know how much of the blade the manufacturer embeds in the plastic support.

A comparison is made between the blade depth at the second calibration point and the third calibration point, thereby indicating the amount the blade needs to be pitched. The depth is generally less at the second calibration point, achieving the pitching of the blade. A gap is created at the second calibration point when compared with the third calibration point. A one-half millimeter gap at the front calibration point is usually appropriate for the skate of a defenseman. A one millimeter gap is appropriate for the skate of a forward while a larger gap up to one and one-half millimeters is useful for the skate of a novice or child skater.

Pitching the blade shifts the apex of the blade. This accomplishes a decrease in the angle of the back of the boot to the surface of the ice, which is normally 90 degrees. Therefore, the Achilles tendon of the skater is stretched

allowing increased knee bend and improved balance, stability and skating power.

Some skates have blades that are substantially longer than the soleplate of the skate boot, i.e., speed skates. Although, most skates have blades that are only somewhat longer than the soleplate of the skate boot, the relevant point is that the blade is longer than the soleplate.

By employing the length of the soleplate rather than the length of the blade, a more accurate determination can be made of the wearer's weight distribution. By basing the contouring on the soleplate length, better contouring to fit the skate wearer can be achieved. Other factors pertaining to the wearer and the use to be made of the skates are also addressed. An analysis of the wearer's physique helps determine how the skate blade should be contoured, including which radius should be imparted to the blade for the work center radius curve.

A case in point is a knock kneed skate wearer, who requires a lesser radius on the main or work center radius curve, whereas a novice or young skater needs the work center radius curve to be greater. A skate wearer having "tight thighs" or inner thighs that are close together as opposed to an open thigh stance, needs a lesser work center radius curve.

Additionally, by varying the overall length of the work center radius curve, differences of each individual skate wearer can be accommodated. A skate wearer who has a large foot in proportion to the body should have the front radius curve extended further into the work center radius curve than the average skate wearer.

The purpose for which the skate is to be used also impacts the contouring of the skate. For instance, a hockey defenseman's skate is desired to have a rounder radius than a hockey goalie's skate, which should have a flatter or larger radius.

It is envisioned that the method can be used with a variety of skate contouring and grinding devices. An advantage of this new method is that when using known skate grinding fixtures, the skate blade is clamped at the first calibration point, thereby holding the skate more securely during the contour grinding and sharpening procedures. Hence, creating less give or flex and consequently, more consistent sharpening results. Moreover, the method as herein described can be programmed into an automatic machine such as a Computer Numerical Controlled grinding machine for consistent and repeatable contouring results.

For a more complete understanding of the present invention, reference is made to the following detailed description when read with in conjunction with the accompanying drawings wherein like reference characters refer to like elements throughout the several views, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a side view of invention according to the invention showing the marking of the center point of the soleplate onto the blade as the first calibration point;

FIG. 2 illustrates a cutaway side view of the skate wearer's foot in the skate boot, with the center line of the pivot axis from the skate wearer's tibia extending to intersect the blade;

FIG. 3 illustrates a cross sectional view of the skate wearer's foot according to the sectional lines 3—3 of FIG. 2 showing the apex point of the tibia;

FIG. 4 illustrates a flow diagram of the steps involved in the method;

marking the second calibration point on the blade from the first calibration point towards the toe of the blade. marking the second calibration point on the blade from the first calibration point towards the heel of the blade.

marking a toe radius point closer to the toe than to the second calibration point;

marking a heel radius point closer to the heel than to the third calibration point;

measuring the depth of the blade at the second calibration point and at the third calibration point.

determining the pitch requirement of the blade from the variation in blade depth at the second and third calibration points.

grinding a first radius curve, the work center radius curve about the first calibration point towards the toe and towards the heel, the work center radius curve having a specific radius.

pitching the blade towards the toe.

grinding a second radius curve, the front radius curve on the blade from the toe towards the work center radius curve, and

grinding a third radius curve, the back radius curve from the heel of the blade towards the work center radius curve.

2. The method for contouring an ice skate blade according to claim 1 wherein the length of the back radius curve comprises between 16 to 20% of the overall length of the blade.

3. The method for contouring an ice skate blade according to claim 1 wherein a wearer of the ice skate having a pivot axis extending from the wearer's tibia to the wearer's heel, the pivot axis having a centerline and the back radius curve being ground to engage the work center radius curve before intersecting the centerline of the pivot axis and before intersecting the third calibration point.

4. The method for contouring an ice skate blade according to claim 1 wherein the length of the front radius curve comprises 20 to 24% of the overall length of the blade.

5. The method for contouring an ice skate blade according to claim 1 wherein a wearer of the ice skate having a point on the wearer's foot where the metatarsus head meets the phalange, the point being extended to the blade as the toe radius point, the front radius curve being ground to engage the work center radius at one of the toe radius point and a point between the toe radius point and the first calibration point.

6. The method for contouring an ice skate blade according to claim 1 wherein the size of an ice skate boot being large as compared to the body of a skater normally wearing that size of ice skate boot, the front radius curve being extended further into the work center radius curve.

7. The method for contouring an ice skate blade according to claim 1 wherein the work center radius curve has greater than the specific radius for a novice skater.

8. The method for contouring an ice skate blade according to claim 1 wherein the work center radius has greater than the specific radius for a skate wearer having thighs close together.

9. The method for contouring an ice skate blade according to claim 1 wherein the work center radius has less than the specific radius for a skate wearer having a knock kneed condition.

10. The method for contouring an ice skate blade according to claim 1 wherein the depth of the blade is measurable from the soleplate to the lower edge of the blade.

11. The method for contouring an ice skate blade according to claim 1 wherein the depth of the blade is measurable from a support of the blade to the lower edge of the blade.

12. The method for contouring an ice skate blade according to claim 1 wherein the depth of the blade is measurable from the top of an unsupported blade to the lower edge of the blade.

13. The method for contouring an ice skate blade according to claim 1 wherein the method is programmable into an automatically controlled grinding machine.

* * * * *

FIG. 5A illustrates the device that is used for measuring the soleplate; and

FIG. 5B illustrates the reverse side of the device with the precalculated indicators and calibration points.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIGS. 1 and 2, an ice skate generally denoted as 10 is thereshown. The ice skate 10 comprises a boot 12 having a toe 14 and a heel 16 with a soleplate 18 affixed to the underside of the boot 12. Extending from the soleplate 18 is an ice skate blade 20.

The soleplate 18 has an overall distance or length 22 from near the toe 14 of the boot 12 to near the heel 16 of the boot 12. The overall distance or length 22 of the soleplate 18 is divided in half, denoting the center point 24 of the soleplate 18. The device 60 as depicted in FIG. 5A can be used to measure the soleplate length 22.

The center point 24 of the soleplate 18 is transferred perpendicularly to the blade 20 and is marked onto the blade 20 as the first calibration point 26. On the device 60 (FIG. 5B) an indicator 25 signifies the center point 24 for the respective soleplate length. Therefrom the first calibration point 26, additional calibration points are individually calculated and marked or simply marked without requiring calculation by using the device 60. The device 60 has the second 28 and third 30 calibration points and the toe 29 and the heel 38 radii points pre-calculated for the various soleplate lengths. Thus, the need for calculation and the potential for error is reduced. Moreover, the time needed to contour an ice skate blade is reduced.

A second calibration point 28 is calculated as 25% of the soleplate length 22 and the second calibration point 28 is marked onto the blade 20 at the calculated distance from the first calibration point 26 towards the toe 14 end of the blade 20.

Similarly, a third calibration point 30 is calculated as 25% of the soleplate length 22 and is also marked onto the blade 20 at the calculated distance from the first calibration point 26 but towards the heel 16 end of the blade 20. The calibration points 28, 30 can be slashed or made with a different color ink to identify the calibration points. A toe radius point 29 and a heel radius point 38 are also marked. The blade depth 31 as was discussed hereinabove is then measured at the second 28 and third 30 calibration points. A determination of the needed amount of pitching of the blade is made based on the variation between the blade depths at the second and third calibration points. Alternately, the pitching can be created by increasing or decreasing the variation (by widening or narrowing the gap at the second calibration point).

Hereafter, a first radius curve, the work center radius curve 32 is ground onto the blade 20 and is centered around the first calibration point 26. The work center radius curve 32 is a specific known radius, although the work center radius curve 32 can be flattened or tightened by altering the radius as was discussed above. The work center radius curve 32 extends between at least the second calibration point 28 and the third calibration point 30 and can extend further on the blade 20.

After the work center radius curve 32 has been ground, or during the grinding, the blade 20 is pitched towards the toe 14 and a second radius curve is ground. A toe radius point 29 at which in the wearer's foot the metatarsus head meets the phalange is extended to the blade 20. The second radius curve, the front radius curve 34 is ground from the toe 14 towards the work center radius curve 32 with the front radius curve 34 being blended into the work center radius curve 32. The front radius curve 34 is ground approximately 20 to 24% of the length of the soleplate. The front radius curve 34 can extend past the toe radius point 29 and to the second calibration point 28 into the work center radius curve 32. For certain physiques of the skate wearer, it is desirable to extend the front radius curve 34 closer to the work center radius curve 32.

Thereafter, a third radius curve, the back radius curve 36 is ground from the heel end 16 of the blade 20 towards the work center radius curve 32. The back radius curve 36 terminates and does not extend into the work center radius curve 32 beyond the center line 38 of the pivot axis 40 extending from the wearer's tibia 42 as is shown in FIGS. 2 and 3. The Achilles' tendon 43 of the wearer is shown in FIG. 2. The center line 38 corresponds to the heel radius point 31. The back radius curve 36 is generally maintained at 18% of the overall length of the soleplate 18.

Now turning to FIG. 4, the steps of the method of the invention are thereshown and described as follows.

The first step 44 is measuring the distance of the soleplate and dividing the distance in half thereby giving a center point of the soleplate.

The next step 46 is transferring the center point of the soleplate to and then marking the center point of the soleplate onto the blade as the first calibration point. The first calibration point is then used as the basis from which to mark 48 the second and third calibration points, calculated as discussed above. The toe radius termination point and the heel radius termination point are also marked.

The next step 50 is determining and comparing the variation of the blade depth at the second and third calibration points to ascertain the amount of pitching to be accomplished.

The next step is grinding 52 the first, specific, known radius, the work center radius curve from the center of the blade towards the toe and also towards the heel.

The next step is pitching the blade 54 and then grinding 56 the front radius curve comprising approximately 20 to 24% of the overall length of the soleplate.

Thereafter, the next step is grinding 58 the back radius curve, with the length of the back radius curve comprising 16 to 20% of the overall length of the soleplate. Part of this step is limiting the back radius curve from extending past the centerline or the apex of the tibia, which center line corresponds to the heel radius termination point.

Having described my invention, many modifications thereto will become apparent to those skilled in the art to which it pertains without deviation from the spirit of the invention as defined in the appended claims.

I claim:

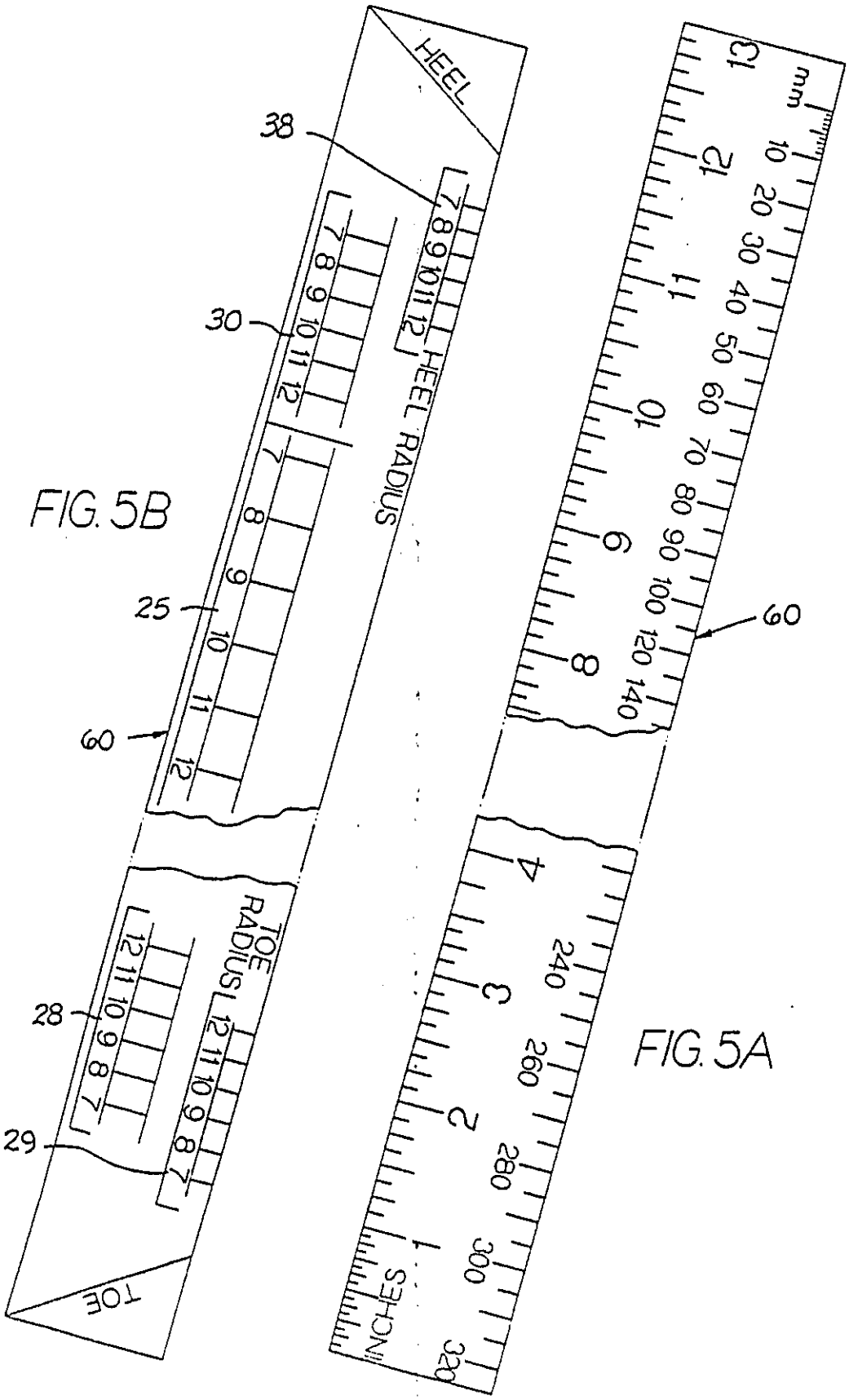
1. A method for contouring an ice skate blade of an ice skate, the ice skate having a soleplate, the ice skate blade having a toe, a heel, and a center portion disposed between the toe and the heel, the method comprising the following steps

measuring the overall length of the soleplate of the ice skate,

calculating the center point of the soleplate and transferring the center point of the soleplate to the blade,

marking the center point of the soleplate on the skate blade as a first calibration point,

calculating a second and third calibration points as 25% of the overall length of the soleplate.


HEEL
38
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INCHES

FIG. 5B

FIG. 5A

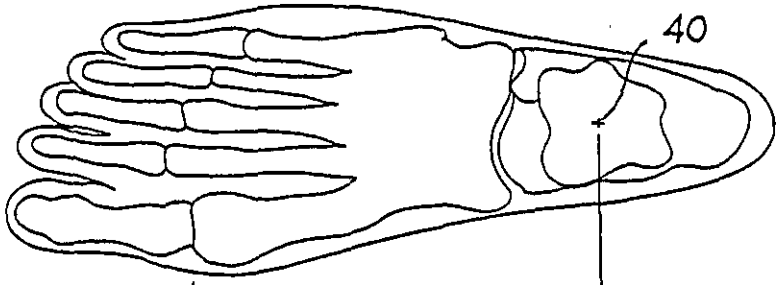


FIG. 3

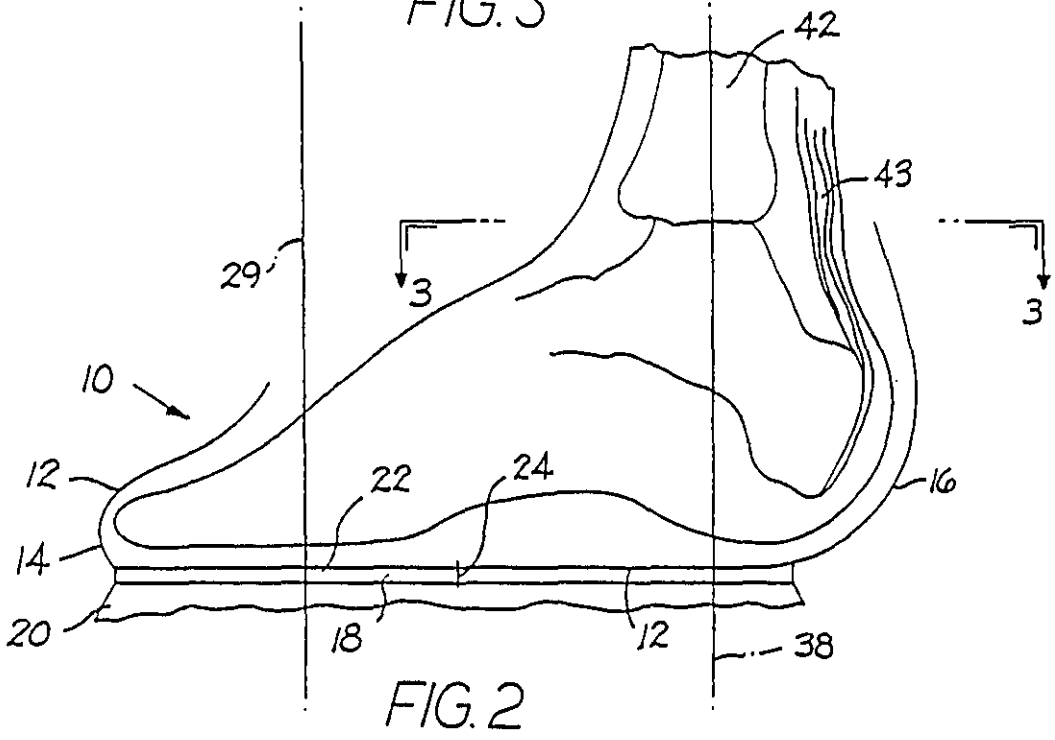


FIG. 2

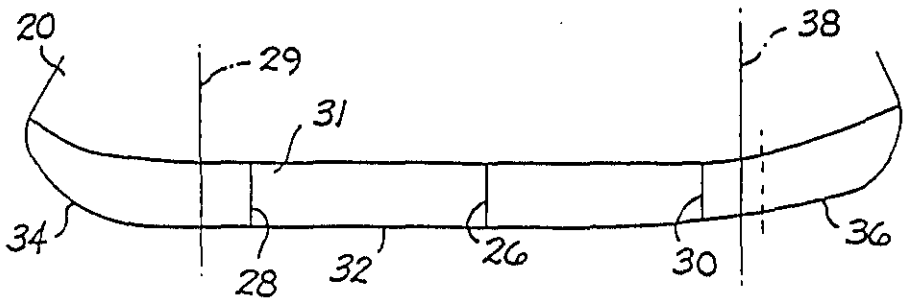


FIG. 1

US005897428A

United States Patent [19]

Sakeriska

[11] Patent Number: 5,897,428

[45] Date of Patent: Apr. 27, 1999

[54] DEVICE FOR CONTOURING AND SHARPENING ICE SKATE BLADES

[76] Inventor: Glenn Sakeriska, 108 Maple St., Ypsilanti, Mich. 48195

[21] Appl. No.: 08/795,368

[22] Filed: Feb. 4, 1997

[51] Int. Cl.[6] B24B 19/26

[52] U.S. Cl. 451/202; 451/45; 451/205; 451/383; 451/404

[58] Field of Search 451/45, 193, 202, 451/203, 205, 206, 224, 229, 234, 372, 383, 404, 405

[56] References Cited

U.S. PATENT DOCUMENTS

3,797,057	3/1974	Smelden .	
3,988,124	10/1976	Babcock	451/383 X
4,069,620	1/1978	Sakeriska	451/383 X
4,078,337	3/1978	Chiasson et al.	451/383 X
4,392,332	7/1983	Sakeriska	451/224
4,685,371	8/1987	Levinson .	
5,009,039	4/1991	Lager et al.	451/383 X
5,480,345	1/1996	Bethea	451/234
5,547,416	8/1996	Timms	451/234 X
5,645,243	7/1997	Kamagai .	

Primary Examiner—Timothy V. Eley
Attorney, Agent, or Firm—Barbara M. Burns

[57] ABSTRACT

A device and method for contouring and sharpening an ice skate blade. The device uses a fixture for holding the ice skate. The fixture employs retractable depending cam rollers to be guided by cam templates recessed into the top surface of the table of the machine. The cam templates are coverable when not in use, thus increasing the usefulness of the top surface of the table. The grinding wheel is movable into and away from the fixture. One of the cam rollers is mounted to an eccentric wheel for pitching the ice skate blade in relation to the grinding wheel. The method comprises the steps of clamping a skate into the fixture, retractably depending or lowering the cam rollers to engage the cam templates in the table of the machine, adjusting the cam roller by operating the eccentric to achieve the desired pitch, moving the grinding wheel to the fixture holding the ice skate and contouring or sharpening the ice skate.

4 Claims, 4 Drawing Sheets

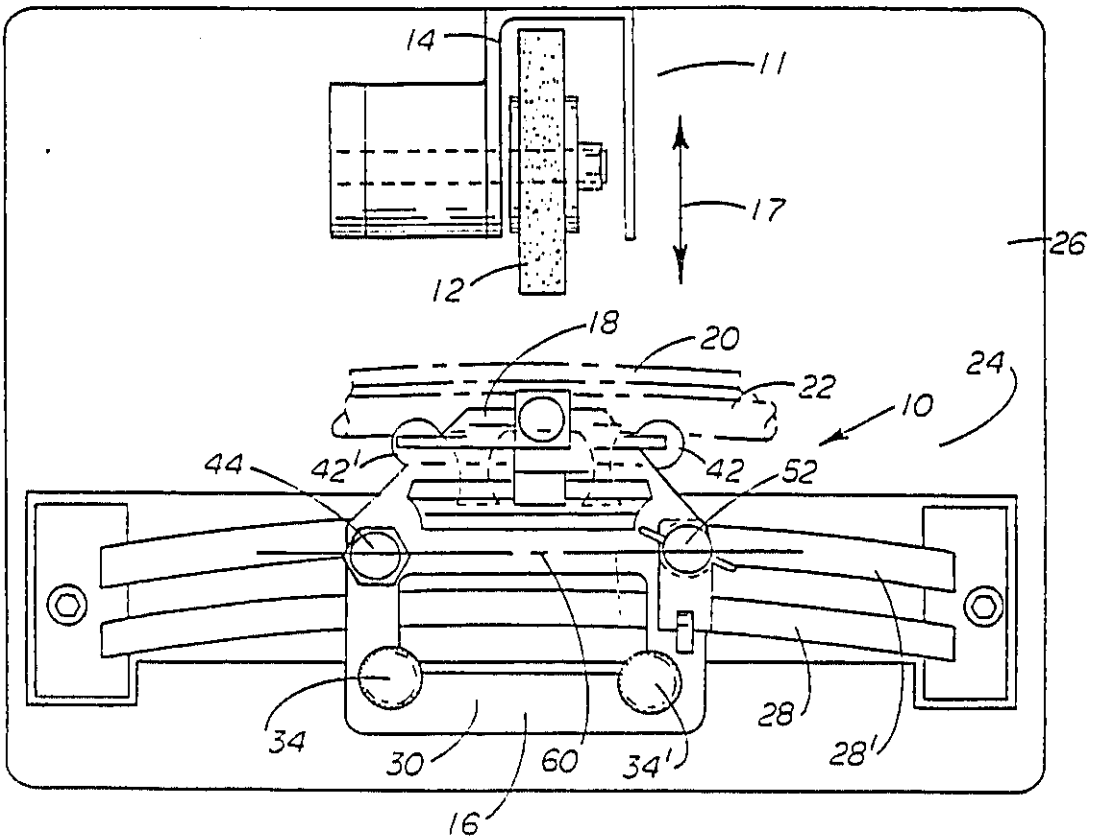
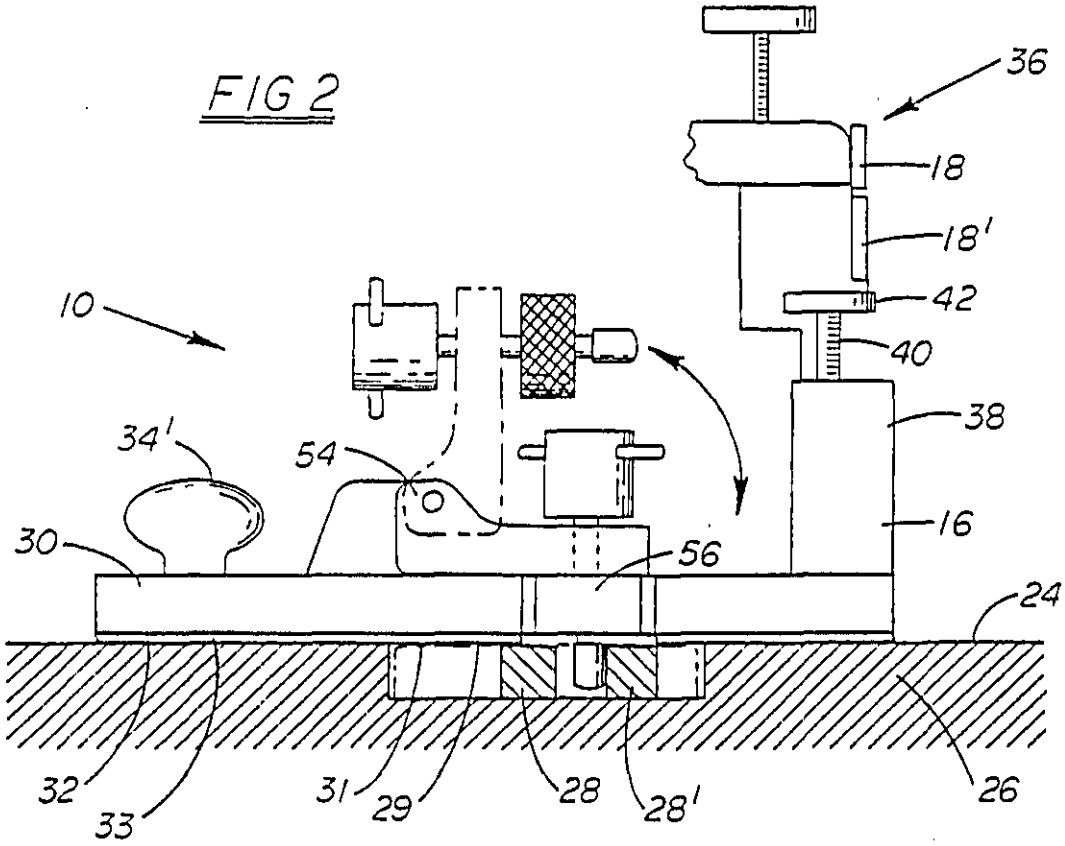


FIG 2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28'
26

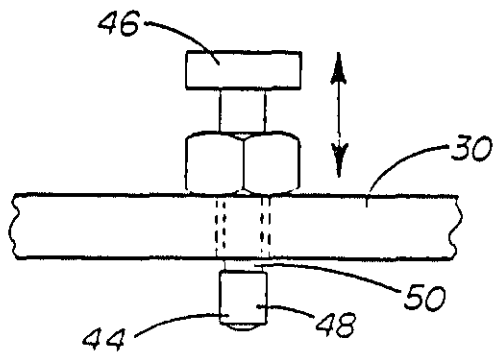

46
30
50
44
48

FIG 3

A METHOD FOR SHARPENING
AN ICE SKATE COMPRISING
THE FOLLOWING STEPS

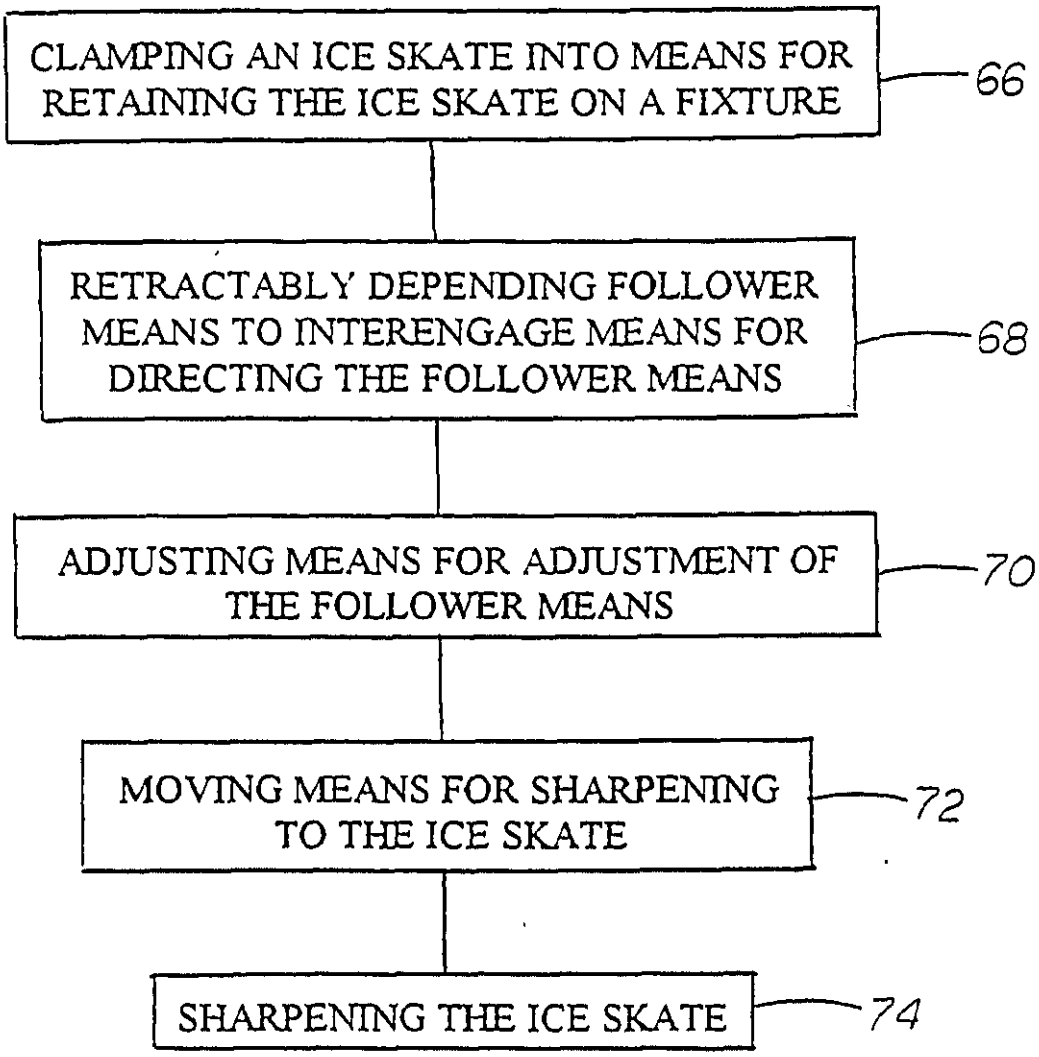


FIG 8

device 10 comprises means for sharpening 11 such as a rotatable grinding wheel 12 housed in a housing 14 and movable into and away from a fixture 16. Other means for sharpening such as water jets or lasers could also be employed advantageously herein. The fixture 16 has clamping plates 18, 18' for clamping the blade 20 of an ice skate 22. The fixture 16 slides along the top surface 24 of a table 26 with the fixture 16 being moveable into and away from the grinding wheel 12 as shown by the arrow 17. Beneath the top surface 24 of the table 26 are emplaced contour or cam templates 28, 28', etc. Means for covering 29 the cam templates 28, 28' when not in use comprise a plate 31 (shown in phantom in FIG. 2) or slat, etc. fittable into the table 26 and level with the top surface 24 of the table 26.

In FIG. 2, the fixture 16 is thereshown in a side view. The fixture 16 has a base plate 30 having a planar underside 32. Felt 33 is affixed to the planar underside 32 to facilitate the movement of the fixture 16. The base plate 30 can have openings therethrough for weight reduction of the base plate 30 and hence also of the fixture 16. Operating knobs 34, 34' at the back of the fixture 16 help the machine operator to move the fixture 16 as will be described more fully hereinbelow.

The front of the fixture 16 contains a skate holding assembly 36. The skate holding assembly 36 comprises the clamping plates 18, 18' which are raised above the base plate by ariser 38.

Means for adjusting the height 40 of the clamping plates 18, 18' comprise adjustment screws 42, 42' disposed on opposite ends of the riser 38. Other means for adjustment could be wedges, spacers, etc. The adjustment screws 42, 42' are threaded into the riser 38 and are adjusted by threading more deeply into the riser 38 to reduce the height of the heads of the screws and thereby the height of the clamping plates 18, 18'. Alternately, the adjustment screws 42, 42' are partially threaded less deeply into the riser 38 to raise the heads of the screws 42, 42' and thereby raise the clamping plates 18, 18'. The means for adjusting the height 40 allows for the fixture 16 to present the blade 20 to the grinding wheel 12 at the appropriate height for the grinding wheel 12.

The grinding wheel 12 in FIG. 1 is shown with the diameter of the grinding wheel 12 as being perpendicular with the top surface 24 of the table 26 of the machine, or in a normal position. For the contouring of ice skates this is a common orientation of the grinding wheel. However, for the sharpening of ice skates, it is to be understood that the grinding wheel may be orientated with the diameter of the grinding wheel 12 as being disposed parallel with the top surface 24 of the table 26, or in a horizontal position.

FIG. 3 depicts a side view of the retractable roller cam 44. The retractable roller cam 44 is emplaced on the left side of the fixture 16 (FIG. 1) but could be emplaced to the right side if so desired. The retractable roller cam 44 is essentially a push pull pin 46 having a rotatable roller 48 mounted thereon on the lower side 50. The roller 48 engages with a cam template 28 in the table when the fixture 16 is positioned over the cam templates 28, 28' and the push pull pin 46 is extended downwardly lowering the cam roller 48.

FIG. 4 depicts an exploded view of the adjustable retractable roller cam 52. The adjustable retractable roller cam 52 is emplaced on the right side of the fixture 16 (FIG. 1). Emplacement of the adjustable retractable roller cam 52 on the right side of the fixture 16 facilitates the using of the fixture 16 by a right handed operator. However, the adjustable retractable roller cam 52 can be emplaced on the left side of the fixture 16 with the retractable roller cam 44

The adjustable retractable roller cam 52 comprises an offset swing arm 54 (FIG. 2) pivotally attached to the fixture 16, an eccentric device such as an eccentric wheel 56 and a roller cam 58 attached to the eccentric wheel 56. The adjustable retractable roller cam 52 is mounted through the offset swing arm 54. The offset swing arm 54 is lowered thus lowering the eccentric wheel 56 into a receiving aperture 57 in the base plate 30 and moving roller cam 58 into position to be directed along the desired cam template 28.

As described hereinabove, the roller cam 58 is attached to an eccentric wheel 56. Turning the eccentric wheel 56 moves the roller cam 58 angularly in relation to a center line 60 between the centers of the retractable roller cam 44 and the adjustable retractable roller cam 52. The angular movement of the adjustable retractable roller cam 52 moves the entire fixture 16 to create the pitching angle and to impart the pitching angle to the blade as the blade is sharpened.

FIGS. 6 and 7 depict an alternate embodiment for adjusting pitch. A fine adjustment assembly 51 acts upon the eccentric wheel 56 to adjust the pitch factor in fine increments. The fine adjustment assembly 51 comprises a worm screw 53 that operates against the offset swing arm 54.

The offset swing arm 54 has indicator marks 62 inscribed thereon the top surface of the offset swing arm 54 and down the angled surface perpendicular to the indicator mark on the top surface to correlate with indicator marks 64 inscribed on the eccentric wheel 56. The indicator marks 62, 64 allow the pitching angle to be duplicated and repeatably ground on different blades.

Now turning to FIG. 8, the steps of the method of the invention are thereshown and described as follows.

The first step 66 is clamping an ice skate into the means for retaining an ice skate on a fixture.

The next step 68 is retractably depending follower means to interengage with means for directing the follower means.

The next step 70 is adjusting means for adjustment of the follower means.

The next step 72 is moving means for sharpening to the ice skate.

The next step 74 is contouring or sharpening the ice skate blade.

Thereafter, the next step (not shown) is retracting the follower means.

The subsequent step (not shown) if needed, is moving the fixture to a sharpening position.

The next step (not shown) if needed, is sharpening the blade.

Having described my invention, many modifications thereto will become apparent to those skilled in the art to which it pertains without deviation from the spirit of the invention as defined in the appended claims.

I claim:

1. An ice skate sharpening fixture having means for retaining an ice skate therein, the fixture having follower means thereon, the ice skate sharpening fixture comprising

a base plate, the base plate having a planar underside,

the follower means being movable above and below the planar underside of the base plate, and

means for radially adjusting the follower means for pitching the blade of an ice skate held in the fixture, wherein the means for radially adjusting the follower means comprises an eccentric device on the follower means, wherein the follower means comprises a roller.

2. An ice skate sharpening device for placement on a flat

below the top edge of the flat surface, the device comprising a fixture according to claim 1 having means for retaining an ice skate therein, the fixture having follower means thereon, the ice skate sharpening device being placeable on the flat surface,

means for directing the follower means, the means for directing the follower means being interengagable with the follower means and the means for directing the follower means being recessed below the top edge of the flat surface.

3. An ice skate sharpening device according to claim 2 further comprising a means for sharpening, the means for sharpening being movable into and away from the fixture.

4. An ice skate sharpening device according to claim 2 further comprising

means for covering the means for directing the follower means, the means for covering fully covering the means for directing, thereby making a contiguous flat surface.

* * * * *

DEVICE FOR CONTOURING AND SHARPENING ICE SKATE BLADES

BACKGROUND OF THE INVENTION

The field of the invention pertains to ice skates. In particular, the invention pertains to a device and method for contouring and sharpening the blade of an ice skate. In the past, the fixture to hold the ice skate had an irregular bottom surface to accommodate cam rollers fixedly mounted thereunder. The cam rollers were engaged with cam templates mounted on the top surface of the table of the grinding machine. A machine of this type is described in my earlier U.S. Pat. No. 4,392,332

The fixture held an ice skate first for contouring the curvature of the ice skate blade and thereafter for grinding the edges of the blade "or sharpening the skates". However, the fixture lacked stability because less than the entirety of the fixture's base plate contacted the top surface of the table. Thus, rocking of the fixture and hence inconsistent grinding or other undesirable results could be observed.

Another disadvantage was that the device for pitching was not a simple device. The device for pitching was employed for changing the curvature of the blade towards the toe of the blade.

Additionally, the fixture was used with cam templates either mounted on the top of the table or were required to be moved into place on the top of the table. Either way, the table was not available or was difficult to use when the device was not being used for the contouring step. Moreover, the cam templates took up usable space wherever they were stored. The permanently positioned top mounted cam templates allowed the build up of grinding dust in between the cam templates, thereby potentially reducing the accuracy of the grind made with the templates and necessitating frequent grinding dust removal.

SUMMARY OF THE INVENTION

It is to an improved device and method for sharpening or contouring an ice skate blade to which the present invention is directed. The fixture holds the ice skate blade for contouring and thereafter for sharpening, or only for sharpening, as needed. Hereafter, it is to be understood that the term sharpening will be used to mean any or all of the following terms, i.e., contouring, grinding and sharpening.

Essentially, the invention comprises a fixture and device that has a planar underside with openings therethrough. The underside is planar across the entire underside and thus facilities the device slidably moving across the flat table of the machine. Cam rollers are retractably disposed on the fixture to engage and remove from cam templates positioned in the machine bed below the flat top of the table. The cam templates are coverable when not in use to extend the usefulness of the top of the table. The cam templates have contours with circular radii of curvature typically between nine to eleven feet. The cam rollers follow the contour of the cam templates and thereby the fixture moves the ice skate blade in a preordained arc against a grinding wheel.

The cam rollers either are mounted on a push pull pin for lowering or raising or on an arm that is swung into a lowered position. One or more of the cam rollers is disposed on an eccentric wheel. By rotating the eccentric wheel, the cam is moved angularly and the ice skate blade held in the fixture is pitched. Pitching of the blade causes the front portion of the blade to be ground more than the rear portion. The pitching of the blade of the skate moves the skate wearer's

knees into a bended position thus creating a kinetic spring to be powerfully uncoiled when the skater moves.

Therefore, the pitching of the blade by the fixture allows different desirable contours to be imparted to the blade. A hockey defenseman requires a different skate blade contour from a hockey forward. The eccentrically mounted cam roller allows different radiuses and hence different depth of grinds to be made to the forward portion of the blade. Thus, the blade is pitched independently of any requirement to pitch the fixture.

The purpose for which the skate is to be used also impacts the contouring of the skate. For instance, a hockey defenseman's skate is desired to have a rounder radius than a goalie's skate, which should have a flatter or larger radius.

Immediately following the contouring step using the roller cams and the cam templates, the fixture is easily slid to a sharpening position without detaching the fixture from the templates. However, when detachment of the fixture from the templates is desired, the fixture is released from the templates merely by operating the push pull pin thereby raising the cam roller from the templates and/or operating the swing arm thereby also raising the cam roller from the templates.

Consideration of the wearer's physique and skill level factor into the contouring and pitching of the skate blade. A lesser contour radius should be imparted to the skate of a knock kneed skater, while a greater contour radius should be imparted to the skate of a novice skater. A greater contour radius should be imparted to the skate of a skate wearer having inner thighs that are close together.

It is envisioned that the device and method can be advantageously employed with a variety of skate sharpening devices. An advantage of this new method is that when using the fixtures, the skate blade remains clamped and the sharpening of the skate blade can be accomplished readily and easily after the contouring step.

For a more complete understanding of the present invention, reference is made to the following detailed description when read with in conjunction with the accompanying drawings wherein like reference characters refer to like elements throughout the several views, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a plan view of the skate sharpening device according to the invention;

FIG. 2 illustrates a right side view of the device showing a partial view of the fixture with the pitchable cam roller deployed in the non-retracted position engaging the cam templates within the table;

FIG. 3 illustrates a side view of the fixture showing the retractable cam roller;

FIG. 4 illustrates a partial exploded view of the adjustable retractable cam roller;

FIG. 5 illustrates the adjustable retractable cam roller arm in the up position showing the receiving aperture in the fixture base;

FIG. 6 illustrates a top view of a fine adjustment for the eccentric wheel;

FIG. 7 illustrates a side view of the fine adjustment for the eccentric wheel; and

FIG. 8 illustrates the steps involved in the method for sharpening an ice skate blade.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIGS. 1 and 2, an ice skate sharpening device generally denoted as 10 is thereshown. The ice skate sharpening

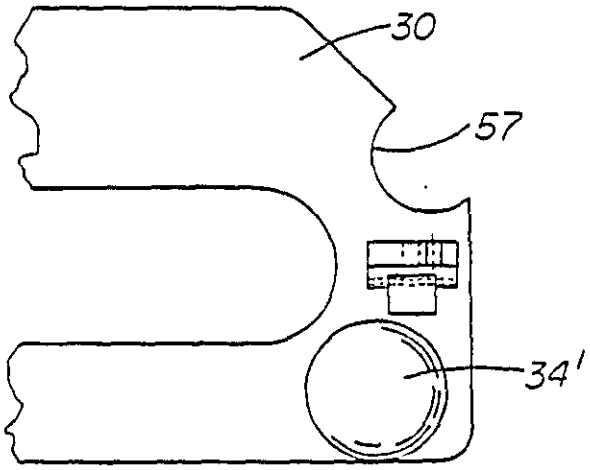


FIG 5

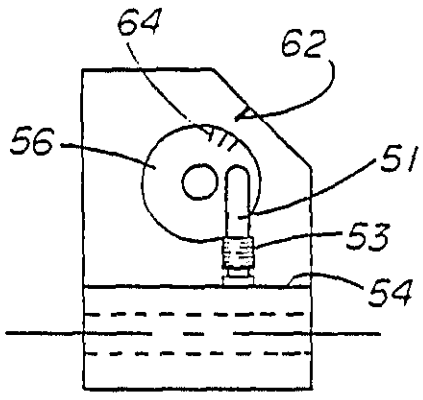


FIG 6

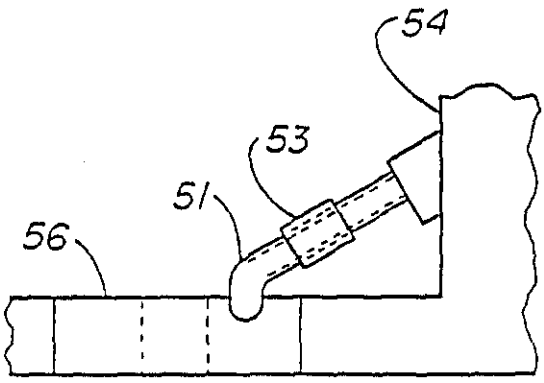


FIG 7

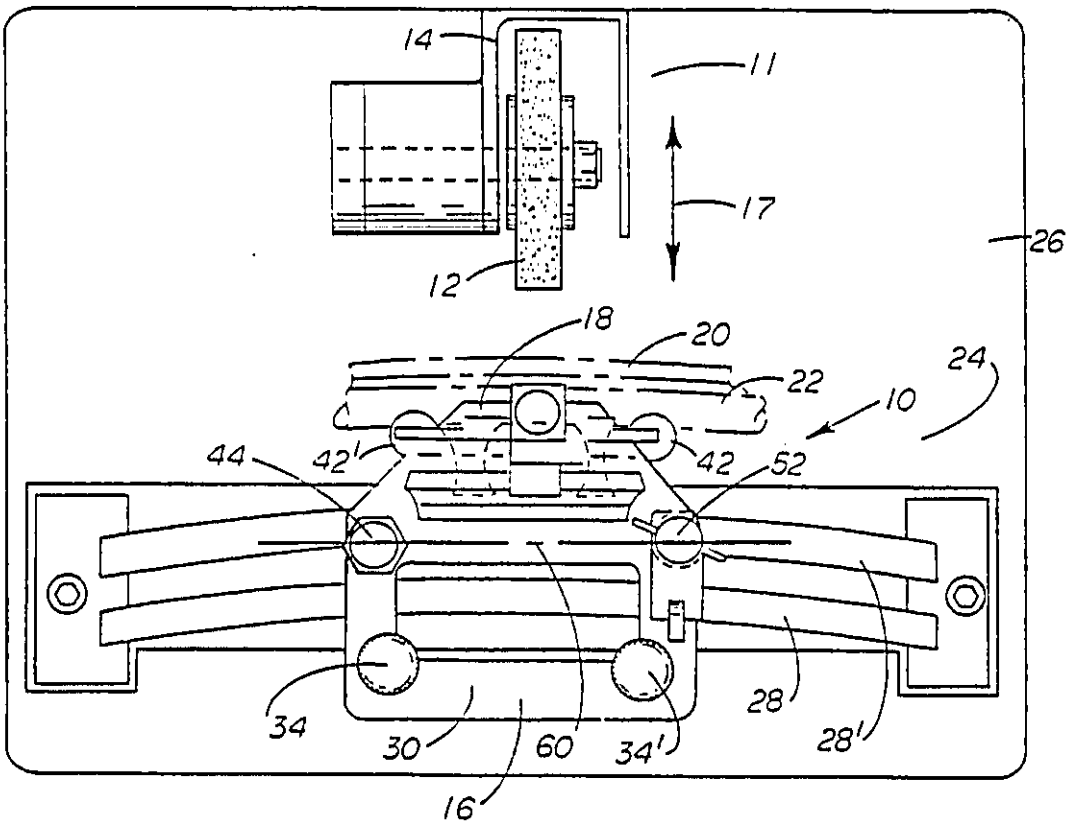


FIG 1

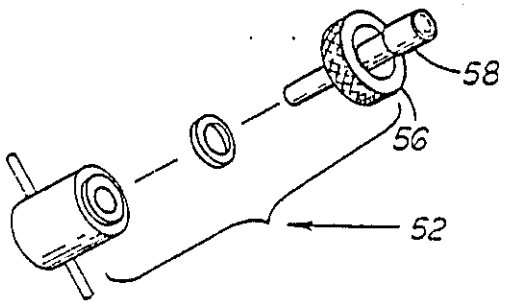


FIG 4

US006443819B2

(12) **United States Patent**
Sakcriska

(10) **Patent No.: US 6,443,819 B2**
(45) **Date of Patent: Sep. 3, 2002**

(54) **DEVICE FOR DRESSING GRINDING WHEELS**

(76) Inventor: **Glenn Sakcriska**, 108 Maple St., Ypsilanti, MI (US) 48198

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/861,823**

(22) Filed: **May 21, 2001**

Related U.S. Application Data

(63) Continuation-in-part of application No. 08/991,473, filed on Dec. 16, 1997, now abandoned.

(51) **Int. Cl.**[7] **B24B 7/00**

(52) **U.S. Cl.** **451/234**; 451/231; 451/541; 451/443

(58) **Field of Search** 451/56, 443, 548, 451/549, 541, 545, 231, 234

(56) **References Cited**

U.S. PATENT DOCUMENTS

1,688,468	A	* 10/1928	Maynard	451/443
3,143,106	A	* 8/1964	Zwick	451/443
5,172,681	A	* 12/1992	Ruark et al.	451/443
5,848,323	A	* 1/1996	Smith	451/56
5,618,221	A	* 4/1997	Furukawa et al.	451/443
5,632,666	A	* 5/1997	Peratello et al.	451/443
5,660,579	A	* 8/1997	Nakayama et al.	451/443

* cited by examiner

Primary Examiner—Eileen P. Morgan
(74) *Attorney, Agent, or Firm*—Barbara M. Burns

(57) **ABSTRACT**

A movable frame assembly to move a device for dressing a grinding wheel for the sharpening an ice skate blade. The device uses a housing surrounding a grinding wheel and movable frame with a swing arm. A dressing tool is mounted in the dresser swing arm and the dresser swing arm is rotatable between a storage position and an operating position. The movable frame assembly slides along rails to allow positioning of the dressing tool into the grinding wheel. Horizontally and vertically disposed bearings are positioned beside and under a rail with resiliently biased bearings are held against the top of the rail. The bearings help the rails of the movable frame move smoothly. The rails are spaced apart by yokes on the arm or a bar across the top of the dresser to prevent binding as the movable frame is slid for dressing the wheel. Adjustment of the rails is also provided for by adjustment slots at the back of the rails.

12 Claims, 6 Drawing Sheets

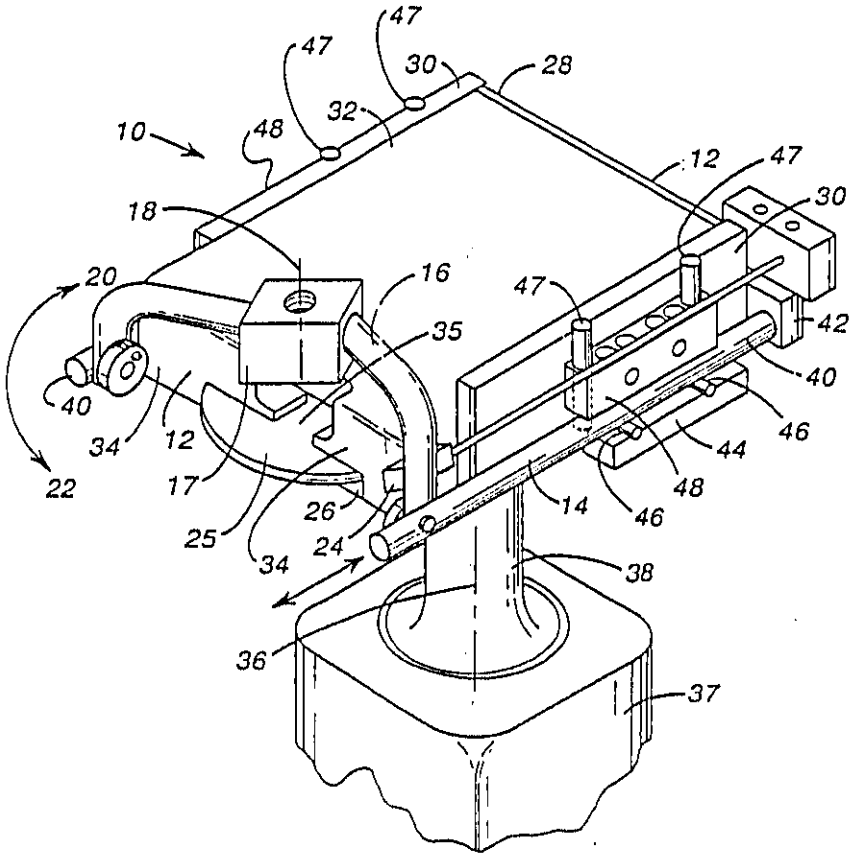


FIG 3

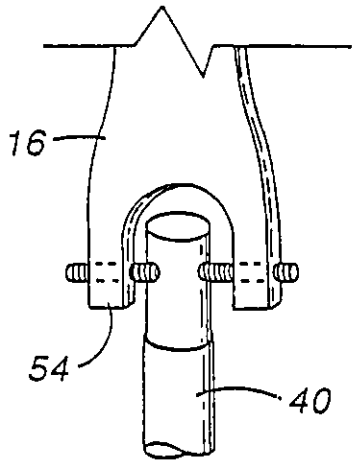


FIG 4

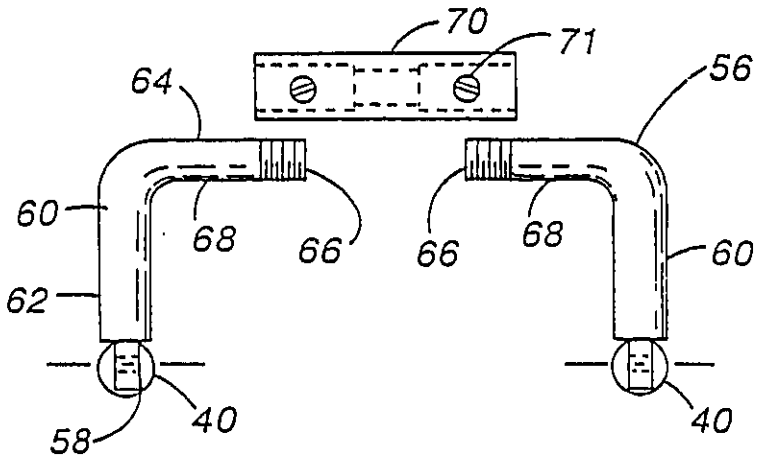


FIG 5

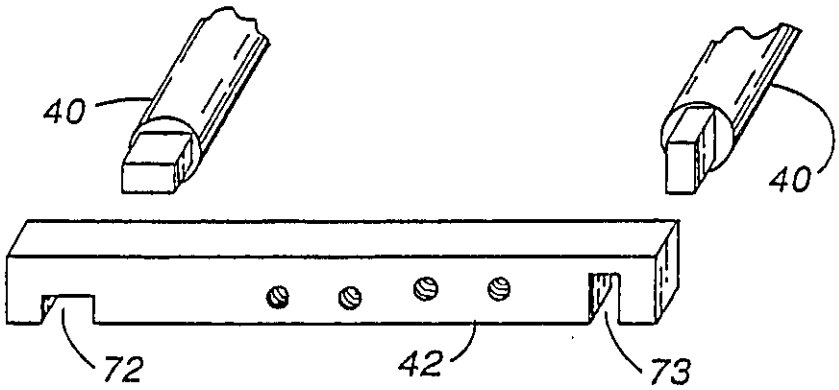


FIG 6

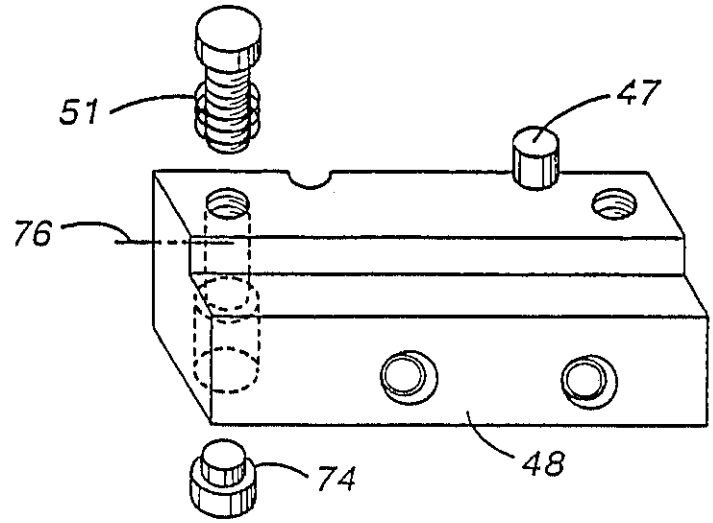


FIG 9

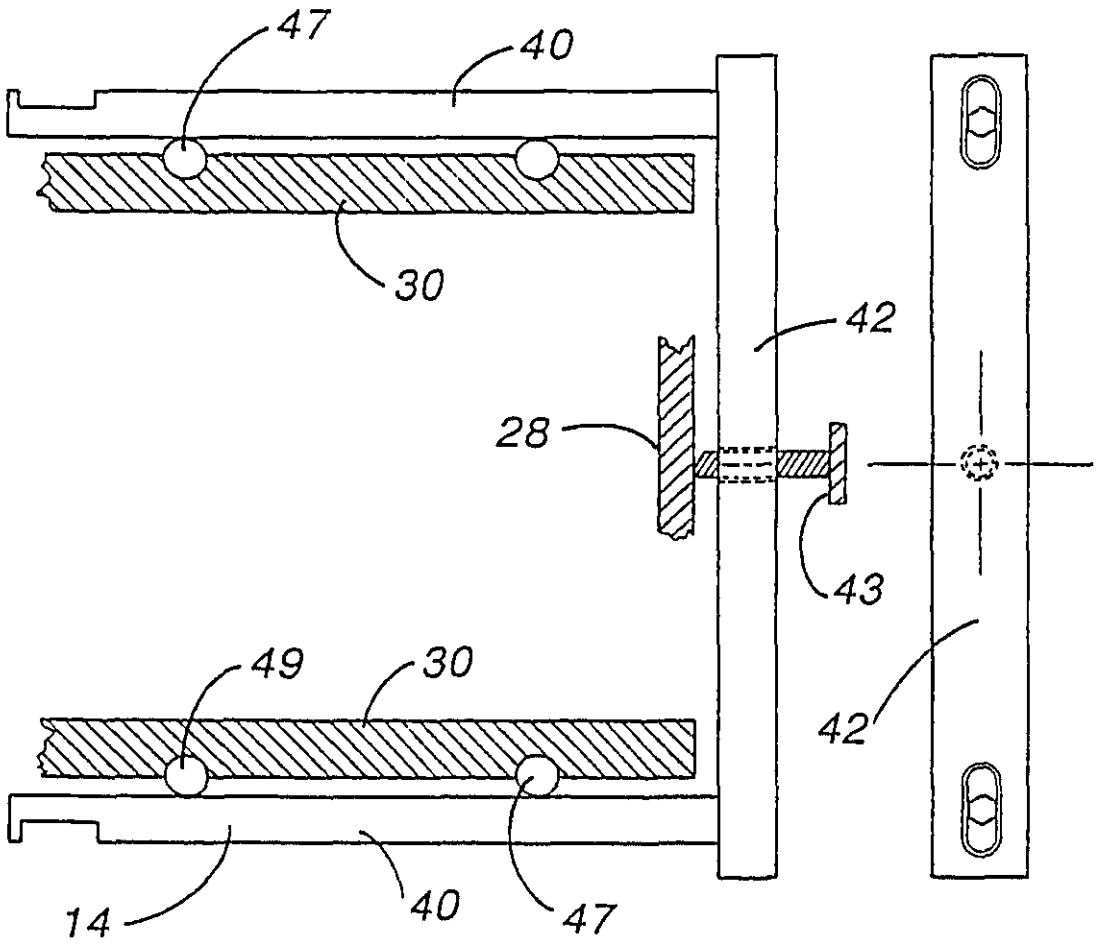


FIG 1B

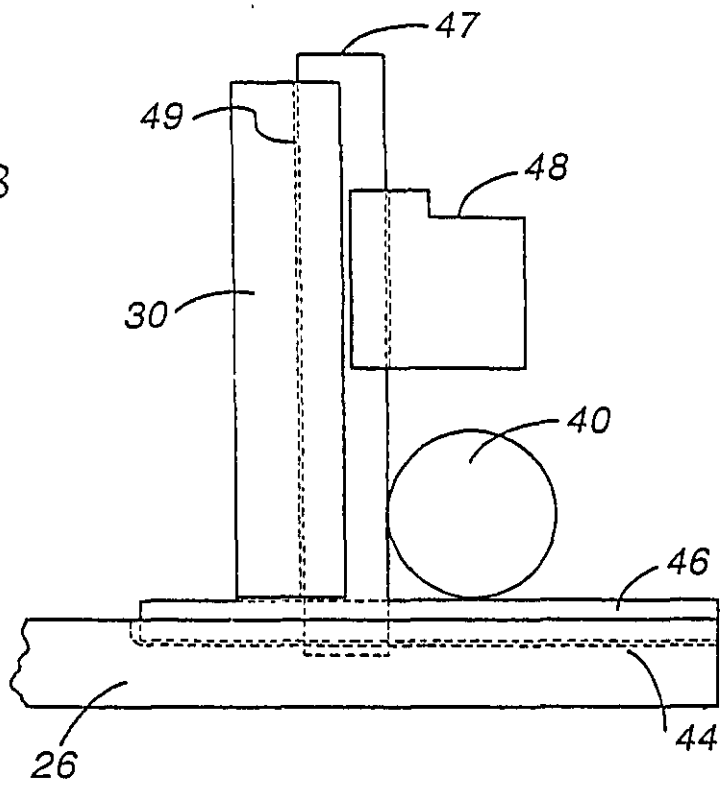


FIG 1C

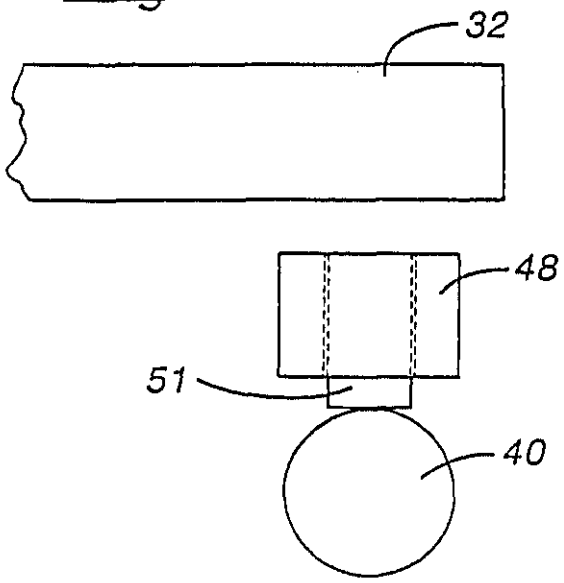
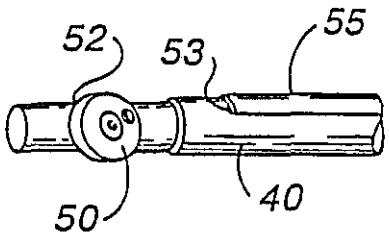


FIG 2



grinding tool engages with the grinding wheel. The dresser arm has an adjustment to allow the dresser tool to be placed against the desired point on the edge of the wheel. The adjustment is by an eccentric adjustment wheel at both ends of the dresser arm.

The movable frame comprises rails and/or shafts that slide on bosses on the sides of the housing. Bearings on the bosses and the housing facilitate the movement of the shafts. The rails/shafts connected at the front by the dresser arm and at the back by a cross bar. Blocks are affixed to the housing above the shafts to hold the shafts. Fixed and/or resilient bearings are added to the rails/shafts and to the blocks to allow the movable frame to easily slide into position. The bearings in the rails/shaft can be strip bearings that are placed into longitudinal grooves milled in the shafts. Resilient bearings or detents are also useful to provide resilient holding.

The rails/shafts must be maintained parallel with each other. Holding the rails/shafts apart or spacing the rails/shafts prevents binding of the movable frame. This is accomplished by attaching the ends of the rails/shafts within the yokes or split ends of the dresser arm. The mass of the dresser arm prevents the shafts from narrowing together and binding. The cross bar also is used for adjustably spacing the rails/shafts.

An alternate rails/shaft spreading device is a spacer connected above the housing. The spacer device comprises two bars that each have a vertical part that is joined to the rails/shaft. Each bar angles to a horizontal part over the top of the housing. The ends of the horizontal parts are threaded, one with right hand threads and the other with left hand threads. A connector having reverse threads, that is, one end having left hand thread and the other end having right hand threads, (similar to a turn buckle) is joined to the bars. Adjustment is made by turning the connector to space the rails/shafts apart or closer together. Lock screws secure the bars at the optimum spacing.

It is envisioned that the device can be advantageously employed with a variety of grinding devices, not just for skate grinding devices. An advantage of this device is the dresser tool is easily slid into position. This invention can be used on other types of grinder/sharpeners.

For a more complete understanding of the present invention, reference is made to the following detailed description when read with in conjunction with the accompanying drawings wherein like reference characters refer to like elements throughout the several views, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A illustrates a perspective view of the dresser device according to the invention;

FIG. 1B illustrates a close-up partial front view of the side of the dresser device with the block over the rail and bearings vertical and horizontally disposed to the rail according to the invention;

FIG. 1C illustrates a close-up partial front view of a variation of the dresser device with the top plate holding the block over the rail and resiliently biased bearings riding on the top of the rail according to the invention;

FIG. 1D illustrates the dressing tool of the dressing device near to the dressing position of engagement with a grinding wheel;

FIG. 2 illustrates a partial side view of the rail showing the adjustment wheel;

FIG. 3 illustrates a view of an end of the dresser arm showing the yoke;

FIG. 4 illustrates a front view of a spacer device for mounting to the rails and connecting the rails above the housing;

FIG. 5 illustrates a back view showing the means for adjusting on the back of a rail;

FIG. 6 illustrates a view of the side block;

FIG. 7 illustrates a view showing a rail of the rail assembly having resilient bearings in the rail;

FIG. 8A illustrates a top view showing the means for adjusting on the front end of a rail;

FIG. 8B illustrates a front view showing the means for adjusting on the front of a rail; and

FIG. 9 illustrates a top view showing the means for adjusting with the back of the device with the side of the housing shown in section.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIG. 1A, a device for slidably moving a pivotable dressing arm having a dressing tool to a dressing position for dressing/shaping a grinding wheel for the sharpening of an ice skate blade, generally denoted as **10** is thereshown. The dressing device **10** comprises a housing **12**, a movable frame assembly **14**, and a dresser arm **16** having a mounting block **17** for a dressing tool (not shown but indicated by center line **18**) attached thereto. The dresser arm **16** is pivotable between a storage position **20** and a dressing position **22**. In the storage position **20**, the dresser arm **16** is retained by a locking mechanism **24** on rod **23**. After the dresser arm **16** is pivoted into the dressing position **22**, the dresser arm **16** with the dressing tool **18** is then movable on a horizontal plane via the movable frame assembly **14** into and away from a grinding wheel **25** for a dressing operation. In FIG. 1D, the dressing tool **15** is shown as mounted to the block **17** of the dressing arm **16** along the center line **18**. Dressing tool **15** is in the dressing position **22** with the dressing tool **15** almost engaging the grinding wheel **25**. To engage the dressing tool **15** with the grinding wheel **25** the dressing arm **16** is moved forward by pushing towards the grinding wheel. Pushing on the dressing arm moves the movable frame assembly **14** along the a left side and a right side of the housing and moves the dressing arm closer to the grinding wheel for controlled engagement of the dressing tool with the grinding wheel.

The housing **12** of the dressing device **10** comprises a planar bottom plate **26**, with a back **28** and sides **30**, **30** extending perpendicularly therefrom. A top plate or cover **32** with depending front edges **34**, **34** fits to the housing **12**. The housing has an opening **35** to allow a portion of the grinding wheel **25** near the circumference of the grinding wheel **25** to extend beyond the housing **12**. However, most of the grinding wheel **25** is covered by the housing **12**.

The grinding wheel **25** is driven by a drive shaft **36** powered by motor (not shown) contained within a motor housing **37**. Thus the grinding wheel **25** is rotated to provide the necessary sharpening to an ice skate blade. The drive shaft **36** is enclosed within a pedestal **38**, upon which the housing **12** is placed.

Movable frame assembly **14** comprises rails **40**, **40** on either side of the housing **12** to which the dresser arm **16** is connected. Rails **40**, **40** are also connected at the back of the housing **12** by a cross bar **42**.

Rails **40**, **40** slide along bosses **44**, **44** extending from the housing **12**. Rails **40**, **40** can be shafts, bars or have other configurations. Bearings **46**, **46** can be emplaced to the