Sept. 10, 1940. O. NYGAARD 2,213,966

DETACHABLE SNOW RUNNER FOR SKATES

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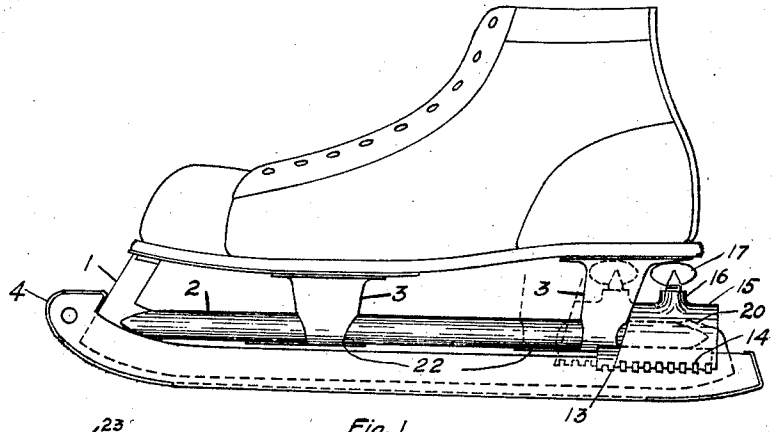

Fig. 1

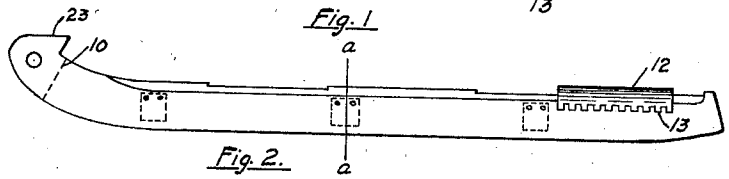

Fig. 2.

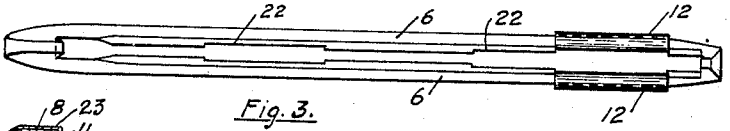

Fig. 3.

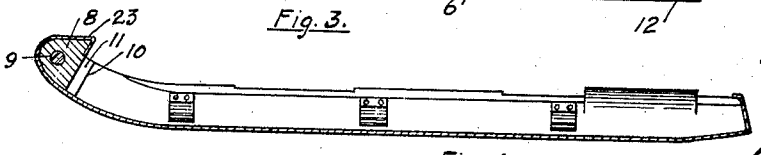

Fig. 4.

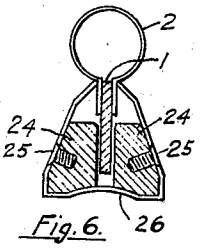

Fig. 6.

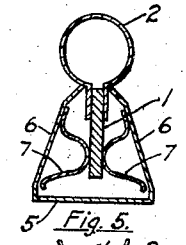

Fig. 5.

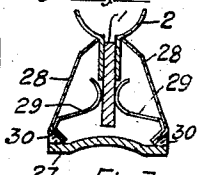

Fig. 7.

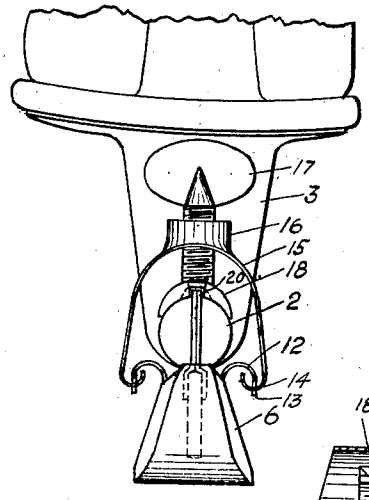

Fig. 8.

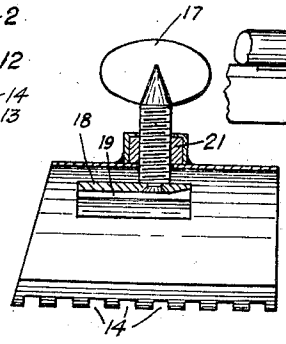

Fig. 10.

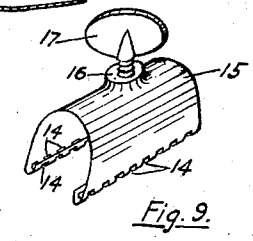

Fig. 9.

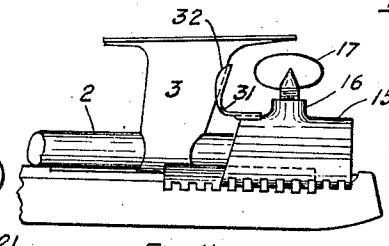

Fig. 11.

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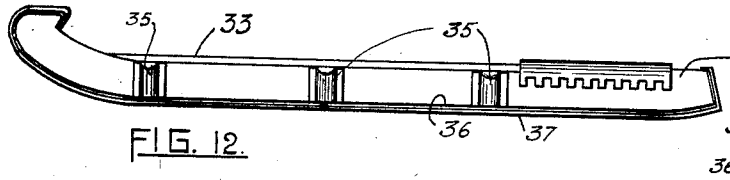


FIG. 12.

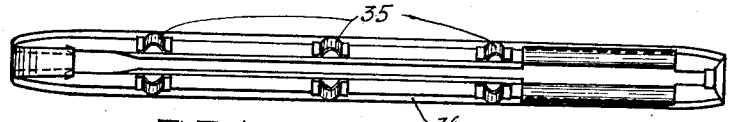


FIG. 13.

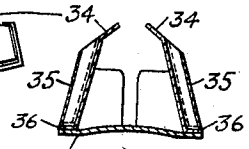


FIG. 14.

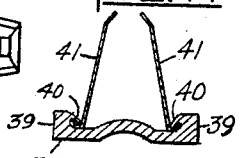
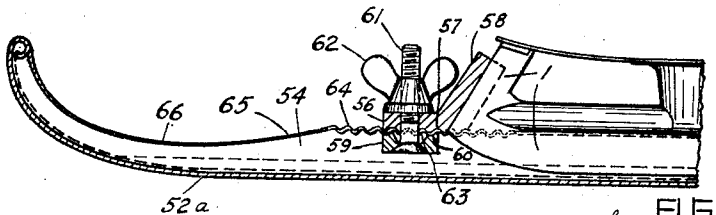


FIG. 15.



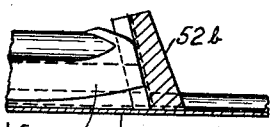


FIG. 16.

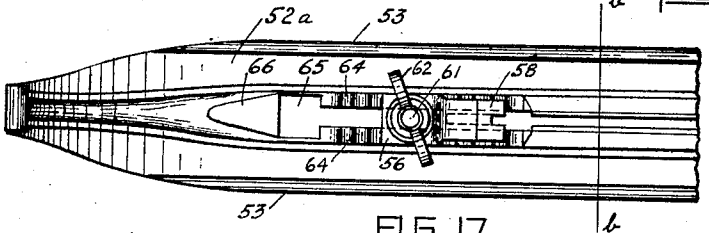


FIG. 17.

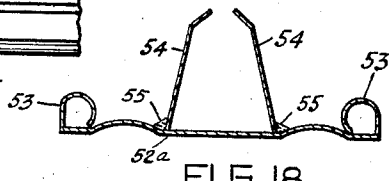


FIG. 18.

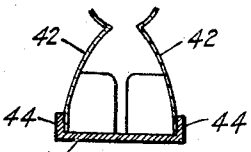


FIG. 20.

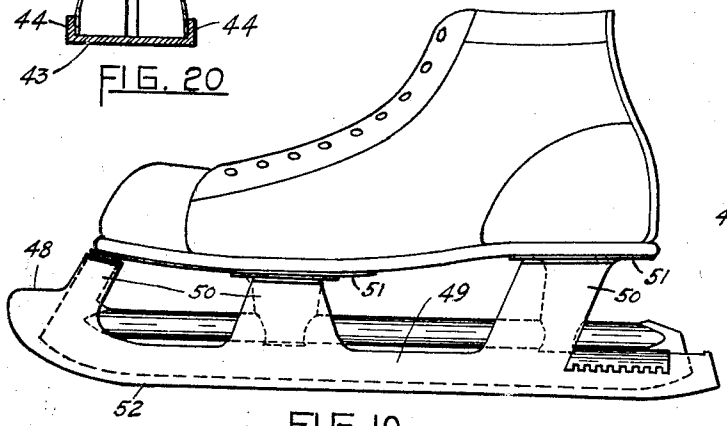


FIG. 19.

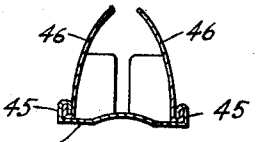


FIG. 21.

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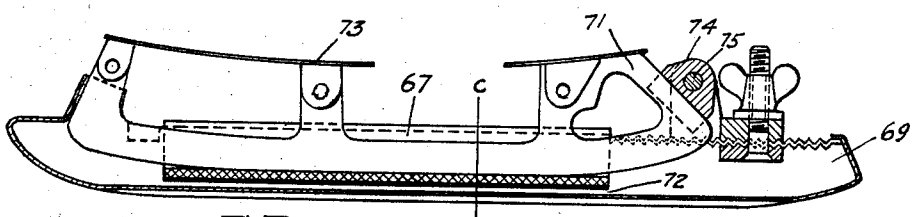

FIG. 22

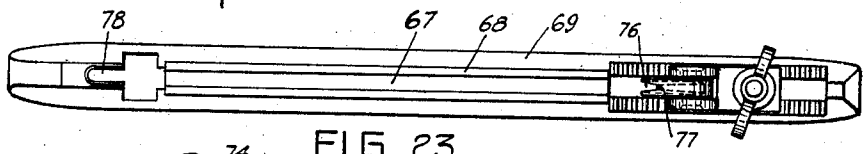

FIG. 23

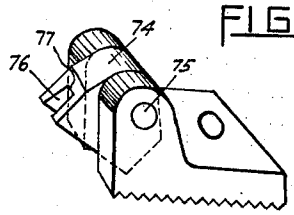

FIG. 25

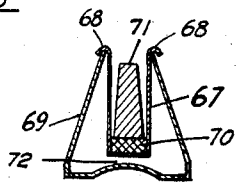

FIG. 24

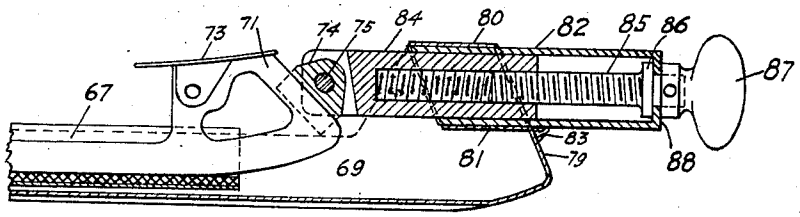

FIG. 26

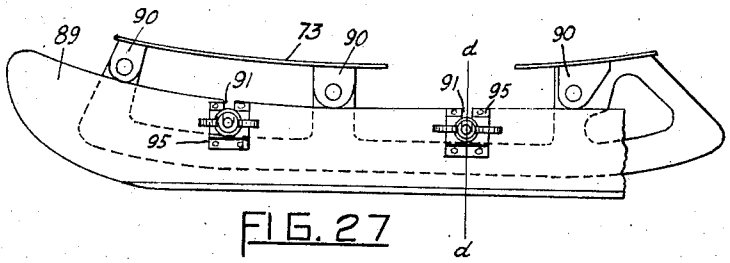

FIG. 27

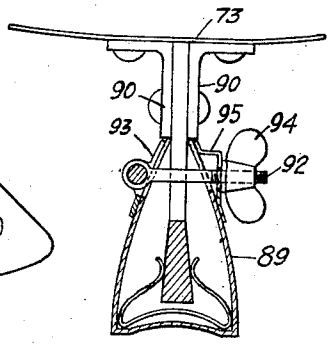

FIG. 28

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Patented Sept. 10, 1940

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UNITED STATES PATENT OFFICE

2,213,966

DETACHABLE SNOW RUNNER FOR SKATES

Oscar Nygaard, Saugus, Mass.

Application August 3, 1937, Serial No. 157,088

26 Claims. (Cl. 280—11.18)

This invention relates to skates and more particularly to runners or blades detachably secured to ice skates. In most localities skating can be indulged in only at short intervals during the winter months as a very smooth ice surface is required. When the surface becomes roughened through snow or rain or covered with only a thin layer of snow, the narrow blade of the ice skate will cut through the crust and make skating practically impossible.

In view of the healthy exercise obtained through skating, which is very beneficial in building up the body and physical well being especially of children and growing youths, it is highly desirable to provide skates which will permit the enjoyment of this healthy sport practically at any time throughout the whole winter. To this end special skates provided with comparatively wide runners or blades have been made for some time past for skating on rough ice or hard-packed snow such as usually had in the streets and on the sidewalks, but such skates have, however, not become very popular and in extensive use due to their excessive weight, clumsiness, and high cost. Were such skates to be made of equally good quality materials, and shoes attached as now ordinarily used in ice skates, the cost would be so high that only a comparatively few youngsters could afford to have them.

It is the purpose of this invention to overcome the objectionable features of the present special snow skates by providing practical, light-weight, yet durable and strong separate runners of suitable width and length to fit any snow or ice condition, that can be quickly and securely attached and detached to and from the ordinary ice skates particularly those having shoes attached and of tubular construction.

A very important and practical feature of my present invention is that the individually detachable runners will be adjustable to fit most any length and shape of the ice skate with equal facility. Thus it will be only necessary to manufacture one, or at the most, two sizes of runners of each particular style in order to fit any number or style of ice skates. This is very important from the manufacturing standpoint as it reduces the number of dies and tools required to a minimum, simplifies the cost-accounting and bookkeeping, and permits the carrying of only a comparatively small amount of stock on hand, all of which helps to reduce the cost of the runner and make possible a very moderate sales price.

Another important feature of this invention is that the runner is so constructed and so attached to the ice skate that the weight and strain on the skate is transmitted to the base of the runner only through the sides thereof. In other words, the ice skate blade does not rest or contact the base of the attachable runner. Thus no distortion or damaging of the smooth and even gliding surface of the attached runner nor the dulling of the edges of the ice skate blade, from contact between two equally hard metals, can take place.

The feature as above also permits the use of much thinner steel plate in the manufacture of the runner and the making of the same in one piece by simply bending to the desired shape. Were the ice skate blade to rest on and transmit the weight directly to the gliding or base portion of the auxiliary or separately attached runner such base would have to be made very thick and heavy to give sufficient stiffness to prevent buckling out of shape.

From the foregoing it will be understood that this invention contemplates as one of its objects a mainly pressed steel product which can be manufactured at a low cost yet made of the best fine grained tempered steel to give great strength and gliding qualities. Also a certain amount of spring and resiliency is obtained which adds materially to the comfort and enjoyment of skating when these runners are used.

Although it is my intention to make the runners from one piece of metal, I might find that they can be manufactured more cheaply by making the base and sides of the runner in separate pieces, joining these together by either brazing, welding, or interlocking of the meeting edges.

I might also make the base of the runner thicker and of cast manganese steel which is hard and durable, joining such base in any practical manner to the pressed steel sides or I might make the complete runner of cast steel.

This invention contemplates further the important feature of means to maintain the ice skate blade centrally within the attachable runner to obtain the desired rigidity, position, and relationship between the runner and skate blade within as shown in the accompanying drawings.

A still further object of this invention is to provide the gliding surface of the runners with longitudinal grooves as shown in the drawings, such grooves adding strength and stiffness to the runners and preventing undue side slipping.

It is further contemplated to provide the detachable runners with stiffening ribs or braces wherever such would be expedient to use in order to permit the use of very thin steel plates in

the manufacture of the runner yet securing the desired stiffness and strength.

The invention is applicable to all types of skates and might readily, without departing from the spirit and intent of the invention, be made to fit the blades or runners of ordinary sleds for children.

Other objects and advantages of the invention will be apparent from the following detailed description when read in conjunction with the accompanying drawings, and novel features will be further pointed out in the appended claims.

In the drawings:

Fig. 1 is a side view of a tubular shoestake with snow runner attached.

Figs. 2 and 3 are side and plan views respectively, and Fig. 4 a longitudinal section of the snow runner shown attached to the skate in Fig. 1, while Fig. 5 is a cross section of the same runner taken on line *a—a* Fig. 2, but showing also ice skate blade in position.

Fig. 6 is a cross section of the same runner but made with a longitudinal groove to prevent side slipping, and provided with different means for holding the ice skate blade centrally within the snow runner, and Fig. 7 a cross section of a runner of somewhat modified construction.

Fig. 8 is a rear view of Fig. 1.

Fig. 9 is a perspective view of the runner clamping means shown at the rear of the skate Fig. 1.

Fig. 10 is a longitudinal section of Fig. 9.

Fig. 11 is a partial view of the skate and runner in Fig. 1 with the clamping means including a forward spring pressing against the rear foot support of the skate.

Figs. 12, 13, and 14 are side, plan and cross sections of a runner equipped with stiffening ribs.

Fig. 15 is a typical cross section of a runner having a comparatively heavy cast steel base.

Fig. 16 is a fragmental side view of a tubular ice skate with a runner in the form of a short ski attached.

Fig. 17 is a fragmental plan view of ski runner and clamping means of Fig. 16 but without the skate, while Fig. 18 is a cross section on line *b—b* Fig. 17.

Fig. 19 is a side view of a tubular shoe ice skate and detachable snow runner showing parts of the sides of the runner extending upward to the shoe for supporting the skate.

Figs. 20 and 21 are typical cross sections showing runners of modified form and construction for use with tubular skates.

Fig. 22 is a longitudinal sectional view of a runner having the same general characteristics as the one shown in Fig. 1 but modified to fit and support an ice skate as shown, not of tubular construction. The clamping arrangements shown are similar to the one for the ski of Fig. 17 but showing the additional feature of a clamping head self-adjustable to the particular angle of the ice skate blade.

Fig. 23 is a plan view of Fig. 22 with the ice skate removed for clearness.

Fig. 24 is a cross section on line *c—c* Fig. 22, and Fig. 25 a perspective view of part of the clamping means employed in Fig. 22 including the self-adjusting head.

Fig. 26 is a fragmentary longitudinal sectional view of the runner shown in Fig. 22 but modified to accommodate a different type of clamping arrangement.

Fig. 27 is a side view of an ice skate similar to the one shown in Fig. 22 but supported differently on a snow runner of modified construction, such part of the runner being shown as is thought necessary to illustrate the modification.

Fig. 28 is a cross sectional view on line *d—d* Fig. 27.

Like parts have been numbered alike in all of the drawings.

Referring now to Figs. 1–5 inclusive, the numeral 1 is the skate blade, 2 the tube brace into which the blade is fastened and 3—3 the front and rear vertical tubular supports. As will be seen, the runner 4 has a much wider base or gliding surface 5 than the skate blade 1, hence is suitable for skating on packed snow or rough snow-crusted ice.

In Fig. 5 the sides 6—6 will be seen to converge to form substantially a triangle with the upper edges fitting into the corners of the tube 2 of the ice skate as shown. The upper portion of the sides is shown bent inward at a sharper angle so as to have the upper edges enter the corners of the tube 2 at approximately an angle of 45 degrees. This is important in that it prevents the edges from slipping out from the corners upward on the tube. The nearly triangular shape of the runner is further important in that it is the form which will give the greatest structural strength with the minimum amount of material required. It is further important in that it permits the runner to be made light of weight and of a neat appearance. The springs 7—7 serves to maintain the skate blade in a central position within the runner.

The hollow nose of the runner may be filled with some light material such as wood or aluminum metal, for instance, as shown at 8 for the purpose of adding strength to this part of the runner. A rivet or screw 9 is made to pass through the nose for clinching the sides together. The filling material 8 may be made to extend to the line 10 as shown best in Fig. 4 to form a centrally located slot 11 to fit the skate blade and act as a further means for maintaining the skate blade centrally within the runner.

At the rearward end of the runner 4 the sides 6—6 are made to form curved portions 12—12 best shown in Figs. 2 and 8. The outer downward edge of the curved portions is notched out to make the teeth 13 for fitting notches 14—14 in the clamp, strap, or shield 15, best shown in Figs. 1 and 9. The clamp strap 15 is fitted with a screw-threaded boss 16 through which pass the thumb screw 17. To the end of the screw 17 is loosely riveted an elongated clamp member 18 which is made to fit the curvature of the tube 2 of the ice skate. This clamp member 18 is made so as to provide a substantial contact area with the tube 2 to prevent crushing or injury to this part when attaching the runner to the skate. The member 18 is further provided with a longitudinal centrally located slot 19 for fitting over the blade 1 of the skate which at the rear end turns slightly upward as shown at 20 Figs. 1 and 8. This slot has the further function of keeping the clamping means in a vertical central position on the ice skate. The boss 16 may be made with an inner screw threaded core 21 of non-corrosive metal to prevent sticking of the thumb screw 17.

The upper edges of the runner 4 is notched out slightly as shown at 22—22 to accommodate the supports 3—3 which overlap the tube 2 of the skate.

From an inspection of Fig. 1 it will be seen that the clamp strap 15 can be moved forward or rearward on the runner a considerable distance without slipping off the cooperating teethed portion. Thus one length of runner is capable of being fitted to several different lengths of skates by simply moving the clamp strap 15 up against the foot support 3, to prevent any retrograde movement of the skate, and then screwing down the thumb screw 17 which raises the strap 15 until the teeth 13 project through the notches or holes 14 of the strap sufficiently to clamp the runner firmly to the skate. The clamp in dotted outline is shown in position when a shorter skate is used. The upstanding portion 23 of the nose of the runner is made to fit the usual incline on the forward end of the skate blade to act as a stop against any forward movement of the skate blade relative to the runner, and to cooperate with the clamping means at the rear to rigidly secure the runner to the skate.

Figs. 1 and 5 show clearly the relationship of the snow runner 4, to the ice skate blade 1. It will be observed that the supporting sides of the snow runner are made of a sufficient height to provide a suitable clearance between the base 5 of the runner and the skate blade. Accordingly the total weight or pressure of the skate will be supported on the sides of the snow runner in such a manner as to exclude any possibility of its base or gliding surface becoming bent out of shape or worn through contact with the skate blade; likewise the sharp edges of the skate blade will not become worn or injured in the least.

Instead of the springs 7—7 in Fig. 5, I might find it advantageous to employ lugs or distance pieces 24—24, Fig. 6, secured to the runner sides at intervals by screws 25 for maintaining the skate blade centrally of the runner. The materials used in such lugs or distance pieces should preferably be softer than that of the skate blade to prevent injury to same. In Fig. 6 I have shown a preferred form of the runner base or gliding surface which has been given an upward curvature or groove 26 for the purpose of preventing undue side slipping, otherwise the runner is the same as the one shown in Figs. 1 to 5.

Fig. 7 shows a runner of essentially the same characteristics as the ones shown in Figs. 5 and 6, but with the exceptions that the base 27 is made of thicker metal than the sides 28—28, and the springs 29—29 are fastened to the runner near the base thereof. The thicker base 27 may be manufactured from steel plate or be made of cast steel and welded or brazed to the sides 28—28. To facilitate welding and obtain a smooth-looking finished product, the sides have been bent inward at their lower edge to form a small triangular space to be filled with the welding or brazing material 30—30.

I might find it desirable to equip the clamp strap 15 with a comparatively stiff spring 31 according to Fig. 11. This spring pressing against the skate support prevents retrograde movement of the skate with relation to the runner, and as the contacting face 32 is made to fit the curvature of the support 3 the finished surface of the support will not be injured.

In the runner 33 shown in Figs. 12, 13, and 14 the sides 34—34 are equipped with stiffening ribs or braces 35 to permit the use of exceptionally thin and light-weight metal. The sides 34—34 are bent outward to form flanges 36—36 whereby the sides may be joined to the base 37, preferably by spot or tack welding.

In Fig. 15 I have shown a modified runner base 38 of a thickness and shape suitable for manufacture of cast manganese steel which is hard and durable and often used in ice skate blades. This base is formed with comparatively thick upright sides 39—39 which will allow grinding down a considerable distance to maintain sharp edges at the gliding surface. The upright sides 39 have each a much thinner inward shoulder 40 which is caulked down upon the hooked edge of the runner sides 41—41 to form a tight and firm joint. This type of runner while being necessarily somewhat heavier than those hitherto described would have the advantage of being equally suitable for both snow and glare ice conditions and especially practical for beginners learning to skate.

Figs. 20 and 21 show other modifications of snow runners, which while maintaining the general characteristics of those described in detail in the foregoing, differ in that the sides are of a somewhat circular shape and joined in a different manner to the base. In Fig. 20 the sides 42—42 continues part way around the tube 2 shown in Fig. 1, and the base 43 has upstanding edges 44—44 for spot or tack welding to the sides, while Fig. 21 shows interlocking joints 45—45 for clinching together the sides 46—46 and the base 47.

A still further modified snow runner 48 is shown in Fig. 19 wherein the runner sides 49, instead of supporting the skate at the junction of the blade 1 and tube 2 of Fig. 1, are provided with upward extensions 50 which at the upper edge are flanged to fit under the foot rests 51 of the skate. A clearance will be observed between the gliding surface or base 52 and the skate blade, and thus the weight of the skate is still supported entirely upon the sides of the runner as in those formerly described.

For comparatively soft snow conditions such as usually obtained on toboggan slides I prefer to make the snow runner in the form of a short ski which may be anywhere from 15 to 30 inches or more in length. Such a runner is shown in a preferred form in Figs. 16, 17, and 18 wherein the comparatively wide base plate 52*a* is provided with edges 53—53 turned upward and rolled to produce stiffness and added strength to the runner. The sides 54—54 which support the skate in the previously described manner are welded, brazed or joined by any other convenient method to the base plate as shown at 55.

In this type I prefer to use the modified clamping means shown located at the forward end of the skate which consists of a part 56 having a ribbed or corrugated base surface 57, an upward projection 58 forked and inclined to fit the usual slope of the skate blade to hold the same centrally of the runner and another part 59 having ribbed or corrugated top surface 60 and the under side countersunk to receive the head of clamping bolt 61 which is fitted with wing nut 62. The part 59 is also countersunk on the upper side at 63 to provide a clearance whereby the bolt 61 and part 56 may be swung forward to a tilting position to release the skate blade 1 when the wing nut has been unscrewed part way on the bolt.

From an inspection of the drawings it will be clear that immediately forward of the skate supporting edges of the sides 54—54 an upper portion of the sides is bent to a horizontal plane and the bent portion pressed to form ribs, notches, or cor-

rugations 64 which matches the ribbed or corrugated surfaces 57 and 60 of the clamping means. The sides 54—54 are notched out at 65 to allow insertion of the clamp member 59 to the interior of the runner. Forward of the opening 65 the sides are joined together to make a hollow rib 66.

It will be evident that the clamping means just described embodies the same general characteristics as those described in connection with Fig. 1 in that either are adjustable along the length of the runner to fit several different lengths of skates or blades but in addition thereto the clamping means of Figs. 16 and 17 include means to clamp and hold the skate blade centrally of the runner. The runner 52*a* is further provided with a forked stop 52*b* to fit the taper at the rear end of the skate blade 1 and cooperate with the forward adjustable clamping means for rigidly attaching and centrally maintaining the skate blade within the runner.

My detachable snow runners and short skis heretofore described in connection with ice skates of tubular construction are equally well adapted for use with ordinary ice skates of the type illustrated in Fig. 22. When the runner is to be used with this type of skate I prefer, however, to employ a sling or strap 67 of light-weight sheet metal which is pressed to form a channel with the upper edges 68 rolled over to receive the upper supporting edges of the runner 69 as clearly shown in Fig. 24. Although the metal from which the channel is made would preferably be softer than the skate blade, I might want to cover the channel bottom with some non-metallic material 70 such as leather, for instance, to provide a more pliable rest and cushion for the skate blade 71.

By combining the strap or channel as shown with the runner a very practical and durable support is obtained for skates of non-tubular construction and it is evident that tubular or any other type of skate can be similarly supported on the runner. By the bent or hooked edges 68 of the channel, means are provided for holding the sides of the runner in the desired spaced relation and definitely prevent the upper edges of the runner from slipping. It will be understood also that whereas I have shown the strap or sling 67 in one channel section, same can be made in two or more sections if desired.

In Figs. 22 and 24 a clearance 72 is shown between the channel or strap 67 and the base of the runner in which case the runner sides takes the full weight and strain on the skate. I do not wish to be limited to such clearance, however, as I might find it practical to make the channel touch the base of the runner so as to sustain at least a small part of the weight and particularly aid the sides of the runner in supporting sudden and severe shocks.

The means for clamping the runner 69 to the skate 73 in Fig. 22 are of the same general construction as the clamp described in connection with the short ski runner in Fig. 16 but modified to include a clamp head 74 turnable about the bolt or pin 75 so as to be self-adjusting to fit any angle of the skate blade 71. As the angle referred to usually varies with every type of skate blade or kind of manufacture this added feature is important for securing the runner firmly to the skate.

As will be seen clearly in the perspective view of the clamping means Fig. 25 and in the plan view Fig. 23 the clamp head 74 is provided with a slot or channel 76 which tapers inward to make the channel of lesser width at the bottom 77 thereof. The taper is there for the purpose of making the sides of the channel fit and grip the edges of different thicknesses of skate blade to firmly clamp the skate centrally of the runner. The slot 78 of the runner is an added means to hold the skate blade centrally thereof at the forward end, thus positively no sideward movement of the skate blade within the runner can take place.

Still another construction for attaching the snow runner 69 to the skate 73 is illustrated in Fig. 26. In connection with this construction the end portion of the runner sides is extended upward and joined together at the top to form guide or bearing support 80. The runner end 79 is bent to form guide or bearing support 81. Thus a square or rectangular opening is formed by the upwardly extended runner sides and the supports 80 and 81, and in this opening a hollow guide or bearing member 82 is rigidly fastened by welding as at 83 or by any other practical method. The rod 84, fitted for slidable movement within the bearing, is forked on one end to receive and support the clamp head 74 which is the same as employed in Fig. 22. The rod 84 is drilled and tapped from the other end to fit the screw threaded adjusting bolt 85 having shoulder 86 and rigidly fitted to the wing nut 87 at the end after passing through the head 88 of the bearing 82. It will be understood that by turning the wing nut 87 the clamp rod 84 can be screwed in or out of the bearing 82 to clamp the runner on or detach it from the skate and that this construction, like the other clamping means shown and previously described, is similar in that several different lengths of skates can be accommodated.

In Figs. 27 and 28 the skate 73 is shown fitted with the modified runner 89. As will be seen, the runner sides fit under the braces 90 of the skate and thus supports this type of skate in a similar manner as the runner 4 supports the tubular skate 1 under the tube brace 2 of Fig. 1. As a means of preventing the runner sides from slipping out from under the braces 90, slots 91 are made in the sides to accommodate eye bolts 92 fastened to one of the sides by hinges 93 and fitted with wing nuts 94 for clamping the sides together, the braces 95 being fastened to the other runner side to provide a bearing surface for the wing nuts 94.

The eyebolts 92 are made of a suitable length to clear the foot support of the skate when swung on the hinges 93 to fasten on or detach the runner from the skate.

While in the past separate runners for skating on packed snow have been devised for detachably securing to ice skates, such for instance as shown in my Patent No. 1,658,093 none of them have, so far as I know, been able of practical application to the now so popular tubular shoeskates.

In my own patent as above, the usual taper, of the ordinary skate blade, such as shown in Fig. 24 of the attached drawings of this application, was utilized for holding the snow runner on the skate which made the problem of fastening such runner a comparatively simple matter, but in the skates of tubular construction, commonly used at the present time, the blades are very thin and entirely without the taper. Hence, the problem of devising a practical detachable runner for tubular skates was much more difficult to solve, particularly as lightness is a much stressed point in tubular skates, which also had to be observed in any detachable runner to be practical, and

yet same had to be of great structural strength. Other detachable runners of which I am aware are equally unsuited for use with tubular skates.

Those skilled in the art will readily understand that while the attached drawings show the detachable snow runner and short ski in the preferred forms, modifications can easily be made without departing from the spirit and scope of the invention. It will be understood that either or any of the clamping means shown can be used with any type of runner or short ski shown, and that I might fit both ends of the runner with adjustable clamping means, or I might fit adjustable clamping means on the forward end only with a stop or non-adjustable clamping means at the rear as shown in Fig. 16, or vice versa as shown in Fig. 1. I might also find it advantageous to utilize the strap or channel addition shown in Fig. 22 in conjunction with the tubular skate of Fig. 1. Thus I do not wish to be limited strictly by what is shown in the drawings, but only by the claims of this application and the prior art. I claim:

1. In combination with a skate, a metal runner adapted for gliding on packed snow, having in its upper surface a longitudinal slot through which the skate blade is entered to the interior thereof, metallic means comprising a screw threaded portion for securing the runner to the skate and said means being adjustable along the length of said runner.

2. A runner for gliding on packed snow adapted to be secured to a skate, said runner having a base forming the gliding surface thereof, said base being joined to upwardly and inwardly inclined sides, the upper edge of the sides being positioned in the corner junction of the tube and blade of a tubular skate to prevent said sides from slipping upward on the tube when the skate is clamped down upon the runner, said sides giving full support to the skate, with the skate blade in spaced relation to said base of the runner.

3. A runner for gliding on packed snow, said runner made hollow and adapted to receive the blade of a skate within, a base and gliding surface for the runner, upwardly extending sides from said base having an upper part thereof bent inward at an angle of approximately 45 degrees to prevent slipping between the upper supporting edges of the runner and the skate.

4. A runner as described for gliding on packed snow having a strap of channel-like cross section, said strap adapted to hold the blade of a skate and having its upper edges turned outward and downward to form a recess along each edge thereof to receive the upper edges of the runner sides, the weight of the skate being supported upon the runner sides through the medium of said strap or channel.

5. A runner for gliding on packed snow adapted to be detachably secured to a skate, said runner made hollow with substantially upright sides, and a hollow member within said runner engaging said sides for co-operatively supporting the weight of the skate thereon.

6. A runner as in claim 5 and, said holllow member including cushioning material whereupon the skate blade may rest.

7. A runner as in claim 2 and, said runner having means for sustaining the skate blade in a central position thereof.

8. A runner as in claim 2 and, said runner having spring pressed means for keeping the skate blade in position centrally of the runner.

9. A runner as in claim 2 and, said base extending outward from said sides to form a gliding surface approximately the width of a ski and said base having longitudinal stiffening braces or ribs along its outer edges.

10. A runner for gliding on packed snow adapted to be secured to a skate, said runner having a substantially rectangular base and gliding surface, and having substantially upright sides, said base and said sides being made separate and provided with cooperating interlocking edges for permanently securing the base and said sides together.

11. A runner for gliding on packed snow, said runner having substantially upright sides, and said sides including a notched portion for detachably securing the runner to a skate.

12. A metal runner for gliding on packed snow, said runner having substantially upright sides, and said sides provided with outwardly extending lugs at one end of the runner for detachably securing the runner to a skate.

13. A metal runner for gliding on packed snow, said runner having substantially upright sides adapted to support a skate thereon the skate being supported along the upper edge of said sides, and adjustable metallic clamping means for said runner for detachably securing the same to the skate.

14. A runner for gliding on packed snow, said runner having substantially upright sides adapted to support a skate thereon; clamping means on the runner and additional means engaging said clamping means for co-operatively securing said runner to the skate.

15. A runner for gliding on packed snow, said runner having substantially upright sides adapted to support a skate thereon; separate clamping means for said runner, and said runner having a part adapted to co-operatively engage the separate means for detachably securing said runner to the skate.

16. A runner for gliding on packed snow having a substantially rectangular base and gliding surface, and having substantially upright sides whereupon a skate may rest and be at least partially supported, said runner having a slot in one side longitudinally thereof to receive the skate blade, a stop for the blade at one end of the slot for preventing endwise movement therein, separate clamping means for the runner and means at the other end of said slot for co-operatively engaging said clamping means to secure the runner to the skate.

17. A runner for gliding on packed snow having a substantially rectangular base and gliding surface, and having substantially upright sides whereupon a skate may rest and be at least partially supported, said runner having a slot in one side longitudinally thereof to receive the skate blade, a plurality of separate clamping means for the runner and co-operative parts on the runner for attaching said runner securely to the skate.

18. A runner for gliding on packed snow having a substantially rectangular base and gliding surface and having substantially upright sides whereupon a skate may rest and be at least partially supported, said runner having a slot in one side longitudinally thereof to receive the skate blade, a stop for the blade at one end of the slot for preventing endwise movement therein, said stop being located at an incline from a horizontal plane to substantially fit over one end of the skate for co-operatively

attaching the runner to the skate and said stop being part of the adjustable mechanism for clamping the runner to the skate.

19. A metal runner for gliding on packed snow adapted for use in connection with a skate, metallic means for fastening the runner on the skate, and said means adjustable along the length of the runner.

20. A metal runner for gliding on packed snow adapted for use in connection with a skate, said runner having metallic means for detachably clamping the runner to the skate, and said means being shiftable along the length of the runner whereby the same runner can be clamped and firmly secured to skates of different lengths.

21. A metal runner for gliding on packed snow adapted for use in connection with a skate, said runner having screw threaded means adjustable along the length thereof for securing the runner to the skate.

22. A runner for gliding on packed snow adapted for use in connection with a skate, adjustable means for fastening the runner on the skate at least at one end thereof, and said means comprising a self-adjusting member adapted to engage an end of the skate, hold it centrally of the runner, and clamp the skate down upon said runner.

23. A runner for gliding on packed snow adapted for use in connection with a skate, said runner having an end portion thereof corrugated or notched, and in combination with said runner, separate clamping means to match said notches or corrugations for co-operatively securing the runner to the skate.

24. A runner for gliding on packed snow adapted for use in connection with a skate, said runner having an end portion thereof corrugated or notched, and in combination with said runner, separate adjustable means co-operatively engaging said corrugations or notches for detachably securing the runner to the skate.

25. In combination with a metal runner adapted for gliding on packed snow, metallic clamping means comprising a member adapted to engage and interlock with the runner at a plurality of points along the length of said runner.

26. A runner for gliding on packed snow and adapted to be secured to a skate, clamping means for the runner comprising a member adapted to engage and interlock with said runner at a plurality of points along the length thereof, and said means having a screw-threaded bolt therein for clamping the runner to the skate.

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