

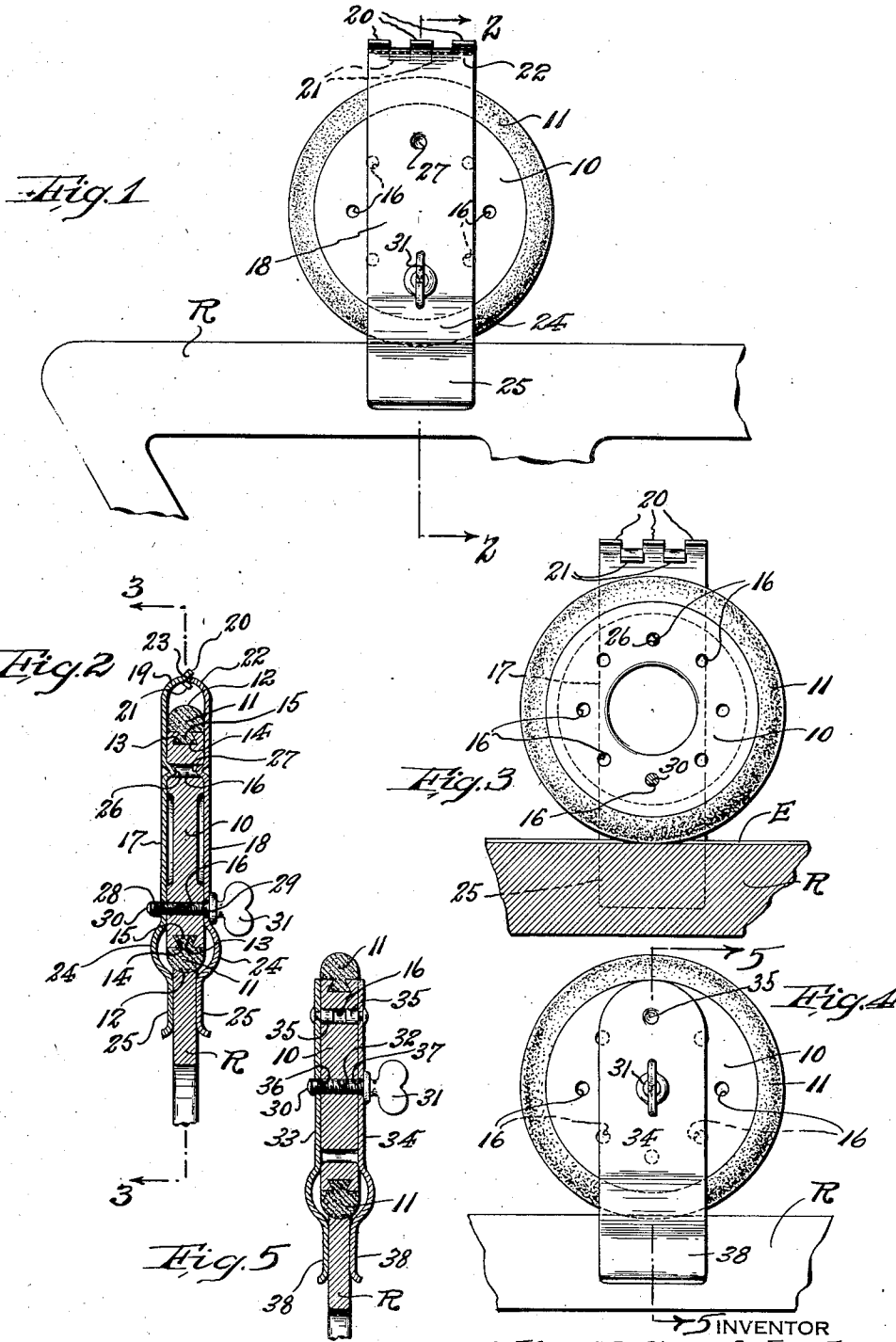
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SKATE SHARPENER

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SKATE SHARPENER

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This invention relates to an improved device for sharpening the runners of ice skates; and the invention has reference, more particularly, to a novel hand tool for the purposes stated which is adapted to produce an effective sharpened edge of concave conformation in cross section.

This invention has for its principal object to provide a simple, inexpensive and yet highly efficient sharpener means capable of manipulation by hand, and so arranged that a novel grinding element is provided in combination with a holding frame and guiding means; said grinding means having a transversely and convexly curved periphery of suitable radius, whereby, upon application to and movement along the skate runner edge, the same will produce the desired sharpened concave conformation of the latter.

This invention has for another object to provide in the sharpener device as above characterized, a means for immovably locking the grinding means to the holding frame in various rotatably adjusted positions, so that as used portions of the periphery of the grinding means are worn down in use, the grinding means may be adjusted to bring successive unused portions of the same into operative position for use, thus providing for progressive consumption of the grinding means, so that the useful life of the same is prolonged, and efficient use of the same is assured without waste.

Other objects of this invention, not at this time more particularly enumerated, will be understood from the following detailed description of the same.

Illustrative embodiments of this invention are shown in the accompanying drawing, in which:—

Fig. 1 is a fragmentary side elevation of a skate runner showing one form of the novel sharpener device operatively applied thereto; Fig. 2 is a transverse vertical section, taken on line 2—2 in said Fig. 1; Fig. 3 is a longitudinal vertical section, taken on line 3—3 in Fig. 2.

Fig. 4 is a side elevation of a modified form of the sharpener device, embodying the principles of this invention; and Fig. 5 is a transverse vertical section thereof, taken on line 5—5 in said Fig. 4.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

Referring first to Figs. 1 to 3 inclusive of the drawings, the novel skate sharpener device therein disclosed comprises grinding means consisting in a suitably shaped hub disc 10. This hub

disc may be formed of cast metal, stamped metal, molded material, or in fact any other material adapted to serve as a support for the grinding material to be carried thereby. Suitably bound to and extending around the periphery of said hub disc 10 is a body 11 of grinding material, preferably comprising a molded annulus of carborundum, emery or other suitable abrasive. The grinding material body 11 is provided with a free edge 12 of transversely convex or curvilinear shape, whereby in operation, as moved back and forth upon and along the edge of a skate runner R, it will form therein the troughlike or transversely concave sharpened edge E which has been found most desirable for skate runners for the reason that such edge formation gives best assurance against side slip of the skates when in use. It will be obvious that there are many ways in which the grinding material body 11 may be affixed to the periphery of the hub disc 10. Illustrative of one method and means for so affixing the same, the hub disc periphery is shown to be provided with a countersunk channel or groove 13, preferably provided with undercut side walls 14, whereby an anchoring bottom rib 15 of the grinding material body 11 may be imbedded therein, thus effectively interlocking the latter to said hub disc 10. The hub disc 10 is provided with an annular row of perforations or openings 16 concentric to its center, the purpose of which will presently appear.

The holding frame of the device, in one illustrative form thereof, comprises a pair of vertically arranged side plates 17 and 18, between which the grinding means is disposed. At its upper end, the side plate 17 is provided with an inwardly directed or curved top end portion 19, provided along its margin with alternated upwardly inclined lugs 20 and downwardly inclined lugs 21, which are relatively divergent so as to form, intermediate the same, a transverse marginal seat. The upper end of the side plate 18 is also provided with an inwardly directed or curved top end portion 22, the transverse free margin of which forms a lip 23 to engage in the seat provided by said lugs 20—21 of side plate 17. The side plates 17—18 are thus maintained in register and against relative displacement, as well as fulcrumed one upon the other. Preferably the lower free end portions of the respective side plates 17—18 are provided with outwardly bowed portions 24 terminating in downwardly extending guide tongues 25, which extend downwardly beyond the lower peripheral portion of the grinding means when the latter is operatively

mounted between said side plates. Said tongues are preferably of a springy or resilient character, whereby the same are self-accommodating to various thicknesses of skate runners. Inwardly pressed from the body of side plate 17 is a tit or stud 26, and, likewise, inwardly pressed from the body of side plate 18 is a corresponding opposed tit or stud 27. Vertically spaced below the tits or studs of the respective side plates 17 and 18, at a distance corresponding to the diametrical spacing the annular row of perforations or holes 16 with which the hub disc 10 is provided, are the respective openings 28 and 29, the former of which is internally screw threaded to be engageable by the threaded shank 30 of a locking thumb screw 31.

To mount the grinding means in the holding frame, the thumb-screw 31 being detached from the side plates, the lower ends of the same are spread apart and the hub-disc 10 is inserted therebetween with the topmost perforation or hole of the annular row 16 thereof aligned relative to the tits or studs 26 and 27 of the respective side plates 17—18, so that when the latter are swung together respectively toward opposite sides of the hub disc 10, said tits or studs will respectively enter opposite ends of said topmost perforation or hole of the annular row 16 thereof. When the side plates are thus arranged relative to the hub disc 10 and its grinding material body 11, the shank 30 of thumb screw 31 is inserted through opening 29 of side plate 18, and thence passed through the lowermost perforation or hole of the annular row 16 thereof provided in said hub disc, and is thereupon screwed through the internally threaded opening 28 of side plate 17, thus interlocking the parts together, with the grinding means immovably affixed relative to the holding frame.

In operating the device for sharpening a skate runner R, the latter is inserted between the guide tongues 25, so that the latter embrace opposite sides thereof, whereupon by pressing the device toward the skate runner, the transversely convex periphery of the grinding material body is operatively engaged with the skate runner edge. While the device is thus engaged, it is moved briskly back and forth longitudinally over and along said skate runner edge, so that the abrasive effect of the grinding material is exerted upon the skate runner edge to produce therein the trough-like transversely concave sharpened edge desired. It will be obvious that inasmuch as the hub disc is held at diametrically opposed points by the tits or studs and thumb-screw, the same is securely interlocked to the holding frame against rotation and consequent displacement of the peripheral section of the grinding material body 11 thereby positioned for use. The device, in such condition, may be repeatedly used for sharpening operations until the effective peripheral section of the grinding material body becomes so worn as to lose transversely convex contour, and consequently its efficiency in producing the sharpened concave edge desired to be formed along the skate runner. When so worn, the holding frame is loosened by disengaging the thumb-screw 31, and thereupon rotating the grinding device one step preparatory to reassembling the same in affixed relation to the holding frame, thereby positioning one unused peripheral section of the grinding material body 11 for use. These operations may be successively repeated until all peripheral sections of the grinding material body have been utilized; whereupon the peripheral

edge of said grinding material body may be dressed to restore the requisite transverse convex contour thereof; or, if this is no longer possible, then the grinding means may be replaced, or the whole device discarded in favor of a new one.

From the above description it will be apparent that this invention provides a very simple and yet highly efficient hand grinding tool for the intended purposes; as well as one capable of a long period of usefulness until the entire effective portions of the grinding material are consumed. It will also be apparent that the tool is exceedingly well adapted to provide a comparatively deep transversely concave sharpened skate runner, with definitely true and distinct sharp margins bordering the respective side faces of the skate runner.

Referring to Figs. 4 and 5, there is disclosed thereby, a modified and somewhat simplified form of grinding or sharpening device which none-the-less embodies the essential principles of this invention, and which operates to produce the same sharpening effects above mentioned. In this arrangement, the grinding means is substantially the same in form and make up as above described, except that the hub disc 10 is provided with a central hole or opening 32 to which the annular row of perforations or holes 16 is concentric. The holding frame is modified to comprise a pair of separate side plates 33—34 to engage opposite sides of the hub disc 10. These plates each have inwardly projecting studs 35 to selectively engage the perforations or holes 16 of the hub disc, and are further respectively provided with holes or openings 36 and 37 to match the central hole or opening 32 of said hub disc. One of said holes or openings, as 36 of side plate 33, is internally threaded so as to be engageable by the threaded shank 30 of the thumb-screw 31. At their lower end portions, the side plates 33—34 are provided with the downwardly projecting guide tongues 38 to engage opposite sides of the skate runner R, when the device is operatively applied to the latter. It will be noted that in this modified arrangement the thumb-screw 31 is so located as to provide an axis of rotation for the grinding means, when sufficiently loosened to separate the side plates far enough to disengage the studs 35 from the hub disc, and consequently rotative adjustment of the grinding means and relocking of the same relative to the holding frame is possible without necessity for entire disassembly of the side plates.

I am aware that many changes could be made in the above described constructions, and that apparently widely different embodiments of this invention could be made without departing from the scope thereof; it is consequently intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:—

1. A skate sharpener, comprising a hub disc having a body of grinding material affixed to and extending around its periphery, said grinding material body having a peripheral portion of convex cross sectional shape, a holding frame straddling the sides of said hub disc and its grinding material body, said holding frame having guide tongues projecting beyond the lower peripheral section of said grinding material body and adapted to straddle a skate runner to which the sharpener is operatively applied, said hub disc having an annular row of openings, opposite sides of said

holding frame having lugs to engage respectively in opposite ends of a selected hub disc opening, and a thumb-screw carried by said holding frame to engage through another of said hub disc openings for the purposes described.

2. In a skate sharpener, a circular hub disc, a body of grinding material affixed to and extending around the margin of said hub disc, said grinding material body having a free peripheral portion of convex cross-sectional shape, said hub disc having a plurality of circularly spaced transverse openings therethrough, side plates respectively disposed across opposite sides of said hub disc and grinding material body, each plate terminating in a guide tongue extending beyond the periphery of said grinding material body, said guide tongues being adapted to straddle a skate runner to which the sharpener is operatively applied, and means carried by at least one of said side plates selectively engageable with said hub disc openings for locking said hub disc in rotatively adjusted positions to bring selected peripheral portions of the grinding material body between said guide tongues and thus disposed for use.

3. In a skate sharpener, a hub disc, a body of grinding material affixed to and extending around the margin of said hub disc, said grinding material body having a free peripheral portion of convex cross-sectional shape, said hub disc having a plurality of transverse openings therethrough, side plates respectively disposed across opposite sides of said hub disc and grinding material body, each plate terminating in a guide tongue extending beyond the periphery of said grinding material body, said guide tongues being adapted to straddle a skate runner to which the sharpener is operatively applied, said hub disc having an annular row of openings concentric to its center, said side plates having inward projections to re-

spectively engage opposite ends of a selected hub disc opening, and manipulatable means for securing said side plates and hub disc in assembled interlocked relation.

4. In a skate sharpener, a hub disc, a body of grinding material affixed to and extending around the margin of said hub disc, said grinding material body having a free peripheral portion of convex cross-sectional shape, said hub disc having a plurality of transverse openings therethrough, side plates respectively disposed across opposite sides of said hub disc and grinding material body, each plate terminating in a guide tongue extending beyond the periphery of said grinding material body, said guide tongues being adapted to straddle a skate runner to which the sharpener is operatively applied, said hub disc having an annular row of openings concentric to its center, said side plates having inward projections to respectively engage opposite ends of a selected hub disc opening, and a thumb-screw engaged through said side plates and through another of said hub disc openings for the purposes described.

5. A skate sharpener, comprising a circular grinding element having a peripheral portion of convex cross-sectional shape and also having an annular row of openings extending transversely therethrough, a holding frame straddling the sides of said grinding element, said holding frame having guide tongues projecting beyond the lower periphery of said grinding element and adapted to straddle a skate runner to which the sharpener is operatively applied, at least one side of said holding frame having a lug to engage in a selected opening of said row of openings provided in said grinding element, and manipulatable means for securing said holding frame and grinding element in assembled interlocked relation.

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