(No Model.) 2 Sheets—Sheet 1.

R. C. HINDLEY.

SKATE.

No. 287,933. Patented Nov. 6, 1883.

Fig. 1.

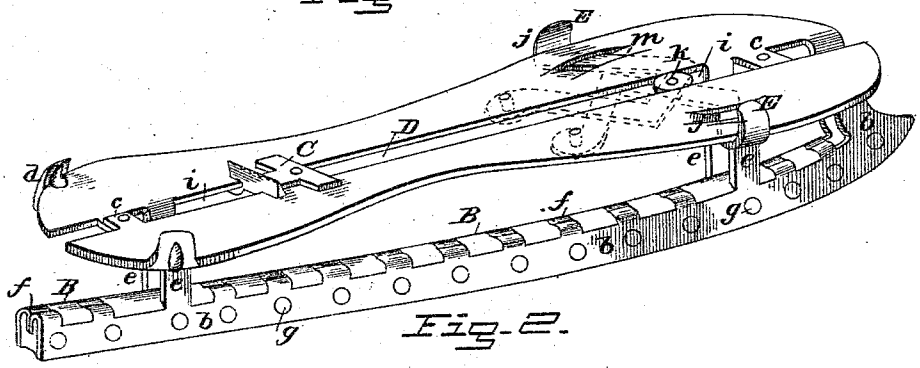


Fig. 2.

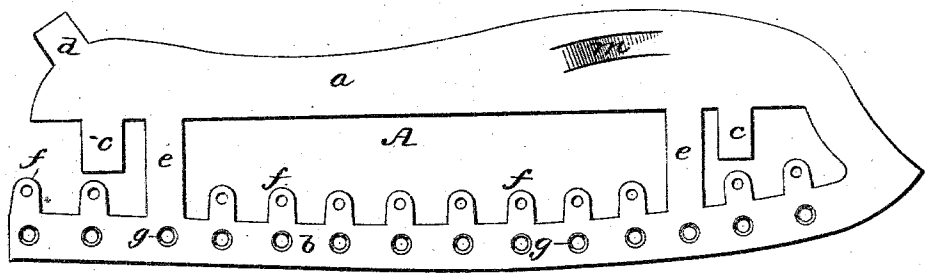


Fig. 4.

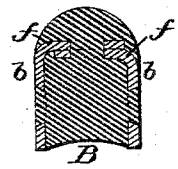


Fig. 3.

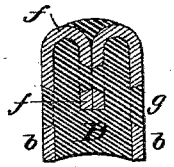
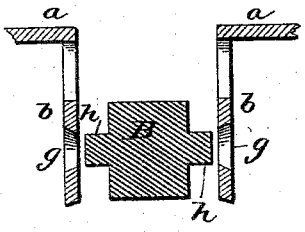


Fig 5



WITNESSES:

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SKATE.

No. 287,933. Patented Nov. 6, 1883.

Fig. 6.

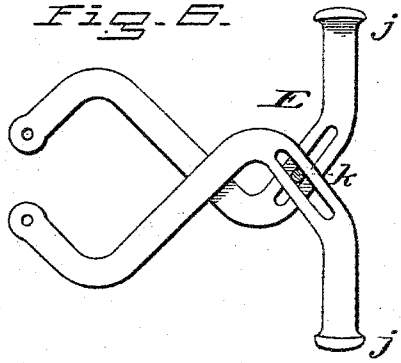


Fig. 7.

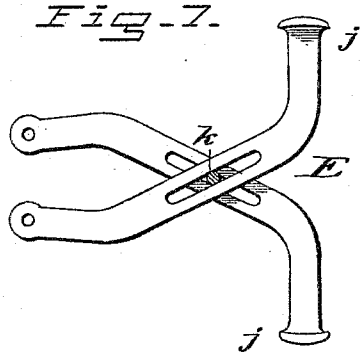


Fig. 8.

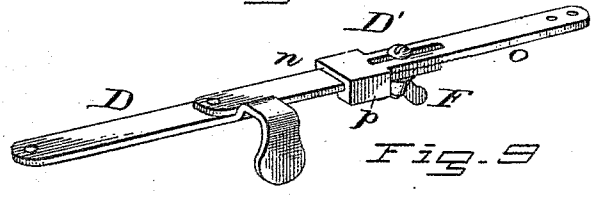


Fig. 9

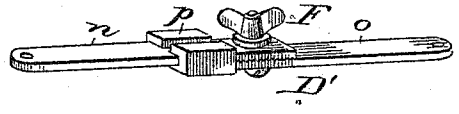


Fig. 10.

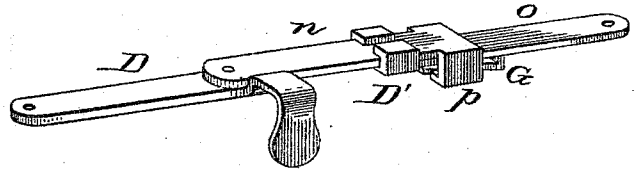
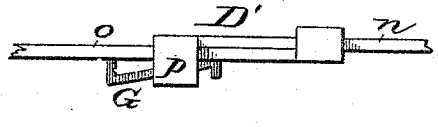


Fig. 11.



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UNITED STATES PATENT OFFICE.

ROBERT C. HINDLEY, OF RACINE, WISCONSIN.

SKATE.

SPECIFICATION forming part of Letters Patent No. 287,913, dated November 6, 1883.

Application filed June 9, 1883. (No model.)

To all whom it may concern:

Be it known that I, ROBERT C. HINDLEY, of Racine, in the county of Racine and State of Wisconsin, have invented certain Improvements in Skates, of which the following is a specification.

My invention relates to skates; and it consists in certain improvements upon that for which I filed application for Letters Patent on the 28th day of February, 1883.

The improvements relate to the manner of forming the runner, the devices for securing the skate upon the shoe, and other details hereinafter more fully explained.

In the accompanying drawings, Figure 1 represents a perspective view of a skate embodying my improvements; Fig. 2, a plan or face view of one of the blanks of which the skate is formed; Figs. 3 to 11, views illustrating details of the construction.

In the skate described in my application above referred to the sole and runner of the skate were formed of sheet-steel blanks, each blank constituting one-half of the sole-plate and one-half of the blade or runner, said blanks being folded or bent so that the sole portion and the part which formed the runner stood at right angles to each other, proper thickness being secured for the blade by separating the two portions which form the sides or faces thereof, interposing between said portions a strip of wood or other material, and riveting the whole together. In the present instance I adopt the same general construction described in the above-mentioned application; but instead of using a wooden separating-strip and separate rivets, I now propose to form the sides of the runners with a series of short lips or ears notched, perforated, bent, or otherwise formed, which lips or ears are turned inward across the space between the two sides of the runner, and embedded in soft metal or other fusible composition employed to form the separating strip or body. I also propose to form the side plates or faces of the runner with a series of perforations countersunk or enlarged at the outer face of the runner, and to cause the filling material to pass through said perforations and fill the same flush with the outer face of the runner, so as to bind together the two parts thereof. This construction will be more readily understood by referring to the accompanying drawings, in which A represents one of the blanks of which the skate is formed. As shown in the drawings, this blank consists of two portions, *a* and *b*, connected by cross pieces or strips *e*. As in the former application, the portion *a* is designed to form one-half of the sole-plate, and is provided with lips *c* and *d*, the former for the purpose of connecting the two blanks, and the latter to form ears or hooks to engage with the heel of the shoe. It has been found in practice that the lips *d* are liable to break at the line of junction with the sole-plate on account of the strain to which they are subjected; and to obviate this difficulty they are each formed with a rib or corrugation, as shown in Fig. 1, made by suitable dies in the act of bending them to their proper shape. The corrugation should extend around the angle formed by the meeting of the lip and sole-plate and may extend across the latter. The rib or corrugation serves to stiffen and brace the lip, and does away with the objection noted. Instead of this arrangement, however, a narrow strip or plate may be riveted or otherwise secured to the under side of the rear end of the sole-plate, and have its ends bent upward against the lips *d*, in order to give greater stiffness. The former arrangement is preferred, however, as it is much neater, adds no weight to the skate, and is as durable as the last-mentioned plan.

In the present instance the runner portion B is formed with a number of ears or lips, *f*, projecting upward from the runner, and of any suitable form, preferably some irregular form—scalloped, notched, serrated, dovetailed—for a purpose presently explained. The runner portions are further provided with a series of holes or perforations, *g*, of tapering form, largest at the outer face of the runner. The blank is folded or bent along the line of the sole-plate *a*, as before, in order to bring said sole-plate into a horizontal position, while leaving the runner *b* and upright *e* in a vertical position or at right angles to the sole-plate, the ears *e* being unbent and projecting horizontally in the same plane with the sole-plate. The ear *d* is bent upward and slightly inward, to engage with the heel of the shoe, as is usual with

this class of skates. The lips or ears *f* are curled inward and downward, as shown in Fig. 3, the two blanks being in all respects duplicates of each other, except that the parts are bent in reverse directions. The blanks thus formed and bent into shape are then placed together, and the ears *c c* riveted, soldered, or otherwise joined, as indicated. The runner portion of the skate is then placed within a mold, of metal or other suitable material, and the fusible composition, preferably white metal, is poured into the mold and caused to rise to a point flush with the highest point of the ears or lips *f*. The molten metal or composition thus flowing into the mold completely fills the space between the two runner-blanks, passes through the perforations *g*, filling the same flush with the surface of the runner, and embeds the ears or lips *f*, passing also through perforations in the same, if there be any, and firmly holding said ears or lips against movement in any direction. The irregular form or perforations cause the lips to be held the more firmly. If said lips be perforated, and the lips of one blank be placed against those of the other, so that the perforations register, the molten metal or other substance will flow through the perforations and form a species of rivet, firmly uniting the two sets of lips. This, however, is not essential, as the embedding of the lip in the body of the metal serves to unite the parts firmly and to form a solid runner.

In order that the fusible metal may more perfectly and readily unite with the runner-blanks, the latter will preferably be tinned before the molten metal is poured in. When this is done a perfect union of the parts will follow, strengthened and increased by the passage of the metal through the perforations of the runner or blade portion.

The lips or ears *f* may be made in a great variety of forms, and the fusible metal or other binding material may extend above the same and be fashioned to give an ornamental appearance, as indicated in Fig. 4.

Instead of the foregoing mode of uniting the parts, it may be found desirable in some cases to cast the filling strip or bar B in a mold independently of the runner, forming said bar with a series of lugs, *h*, to pass through the perforations *g* of the runner. Said bar being interposed between the two runner-plates, with the lugs *h* passing through their perforations, the lugs are flattened down or riveted to fill the perforations flush with the surface of the runner, and any surplus which may be present will be dressed off to give a smooth finished appearance.

The heel-fastening I propose to construct as in my former application—that is to say, with the same two ears *d* on the sole-plate, and the sliding clamping-jaw C, operated by a toggle-lever, D, as before.

The toe or sole fastening will preferably consist of two pivoted levers or clamping-jaws, E, of the form shown in Fig. 6. These levers or clamps are of similar form, but bent in reverse directions. Their inner or rear ends are pivoted to the under side of the sole-plate *a*, and they extend thence inward across the slot *i* at the middle of the sole-plate above the runner, thence back across the slot in an oblique direction, and outward past the side of the sole-plate, terminating in an upwardly-curled ear, *j*, to clasp the sole of the boot or shoe on which the skate is worn. Two such levers or clamps are used for each skate, being attached to the sole-plate on opposite sides of the runner, and arranged to extend upward on opposite sides of the sole-plate, as indicated. The oblique portions of the two levers or clamping-jaws are thus caused to cross each other, and said portions are slotted, as shown in Fig. 6, to receive a stud or pin, *k*, of the toggle lever or bar D, which pin, traveling forward in the slots as the lever D is elongated, serves to draw the outer ends or ears *j* of the clamping-jaws together, and to cause them to grasp the sole of the shoe firmly.

It is obvious that the levers or clamping-jaws E may be turned end for end and pivoted near the toe or front end of the sole-plate, or that instead of extending outward past the sole-plate on the same side of the runner as their respective pivots, they may be pivoted at one side of the runner and extend across the sole-plate to the opposite side thereof, terminating in the jaws or ears *j*, as before; but in either of these latter cases the slots *l* would be inclined in a reverse direction to those of Fig 5. The moving ends of the levers or jaws E will be supported by metal straps passing beneath them, headed studs passing through slots therein; or, as will be preferred, by straps or loops *m* stamped from the sole-plate *a*, as in Fig. 1.

The toggle-lever D consists, as before, of two main parts, D and D′, jointed together, one attached to the heel-clamp or jaw C, and the other acting with or upon the clamping-jaws E. Instead of providing a series of holes for the adjustment of the section D′ relatively to the clamping-jaws E, I propose, now, to make said section in two parts, *n* and *o*, and to provide for adjusting one upon the other. This I do in the manner represented in Figs. 8, 9, 10, and 11, the first two figures showing the preferred plan and the last two a slight modification of the same. The section *o*, or preferably both sections, *n* and *o*, are formed with lateral projections *p*, which are bent over and flattened down upon the companion part, binding the two together, but permitting a free sliding of one upon the other. In Figs. 8 and 9 I have shown the part *o* as slotted through the greater portion of its length, to receive the shank of a thumb-screw fastening or clamping device, F; and in Figs. 10 and 11 the slot is omitted, and a wedge or beveled slide, G, is introduced into the loop *p*, to draw the parts *n o* firmly together and prevent the sliding of one upon the other, their faces being prefera-

bly roughened or serrated, to prevent them from slipping. The wedge may be simply a flat piece of sheet-steel, bent as indicated. It will be seen that the lips or ears *f* may be omitted from the runner, if desired, and only the perforations provided to give a hold for the soft metal; that the perforations may be omitted, and only the lips and the soldering or adhesion of the soft metal to the steel of the runner-facings be depended upon to unite the parts; or the lips or ears may be punched from the body of the runner portions and turned inward, to be embedded in the metal. These plans or modifications I consider as within my invention.

Instead of a series of small lips, *f*, the whole upper edge of the runner between and each side of the bands *e* may be turned over.

Having thus described my invention, what I claim is—

1. A skate-blank, substantially such as described and shown, provided with a series of lips, *f*, projecting from the runner portion, substantially as shown and described.

2. A skate-blank, substantially such as shown and described, having the runner portion provided with a series of conical or tapering holes, for the purpose explained.

3. In a skate, a runner or blade consisting of two sheet-metal facing-plates provided with inwardly-projecting ears, and a filling and binding material, filling the space between the plates and enveloping the lips, substantially as shown and described.

4. In a skate, a runner-blade composed of sheet-metal facing-plates provided with conical perforations, and a soft-metal filling occupying the space between the facing-plates and passing through the perforations therein.

5. The herein-described method of forming a runner or blade for skates, consisting in placing, at suitable distances apart, two sheet-metal blanks provided with perforations and projecting lips, or either, and pouring into the space between them molten soft metal or like substance, whereby the said substance is caused to unite the parts, as explained.

6. The process herein described of forming skate-runners, which consists in first tinning two sheet-metal blanks of the desired form of the runner, separating said blanks to give the required thickness to the runner, and pouring molten white metal into the space between the blanks and permitting it to cool therein.

7. In a skate, a sheet-metal sole-plate provided with lips *d*, corrugated substantially as shown and described, for the purpose explained.

ROBERT C. HINDLEY.

Witnesses:
ERASTUS C. PECK,
JAMES W. PALMER.