

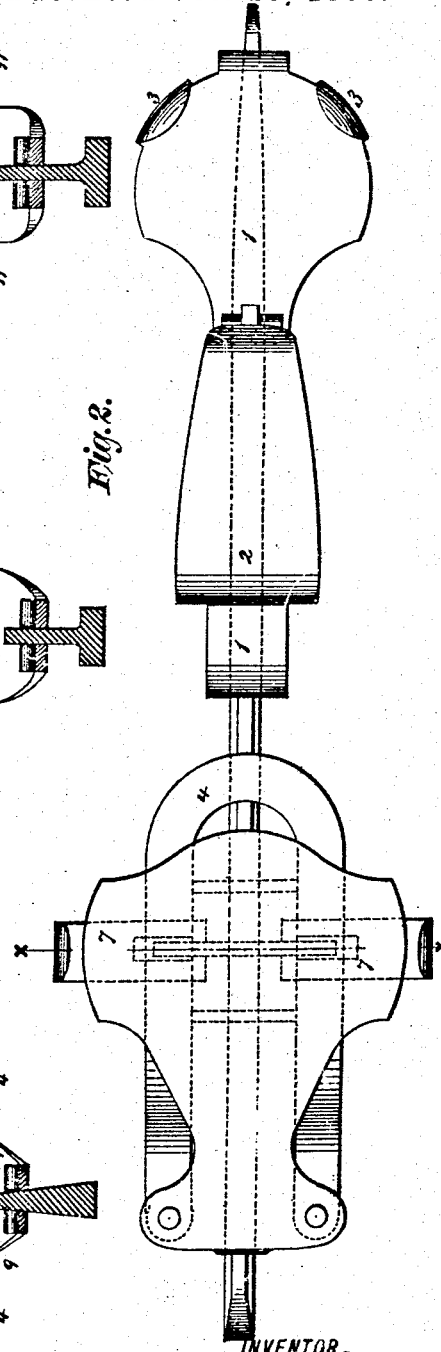
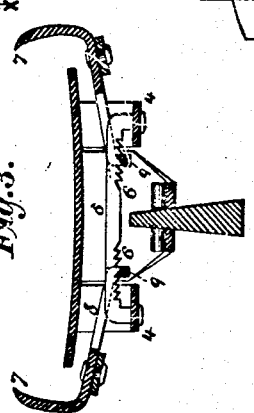
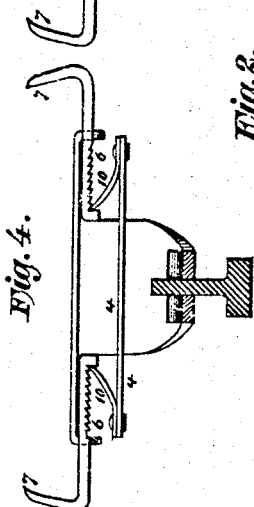
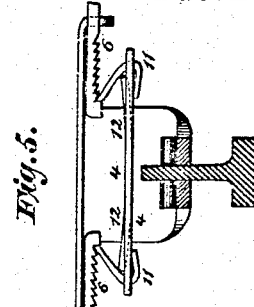
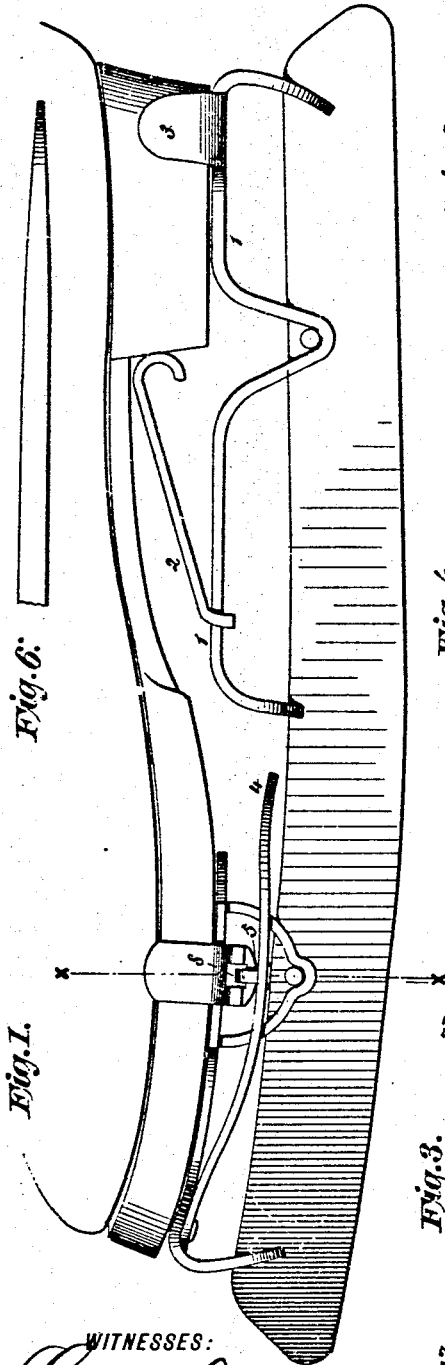
(No Model.)

J. FORBES.
SKATE.

2 Sheets—Sheet 1.

No. 391,136.

Patented Oct. 16, 1888.



WITNESSES:
Gustave Dittewich
Robt. F. Marshall

INVENTOR.
John Forbes

(No Model.)

2 Sheets—Sheet 2.

J. FORBES.

SKATE.

No. 391,136.

Patented Oct. 16, 1888.

Fig. 7.

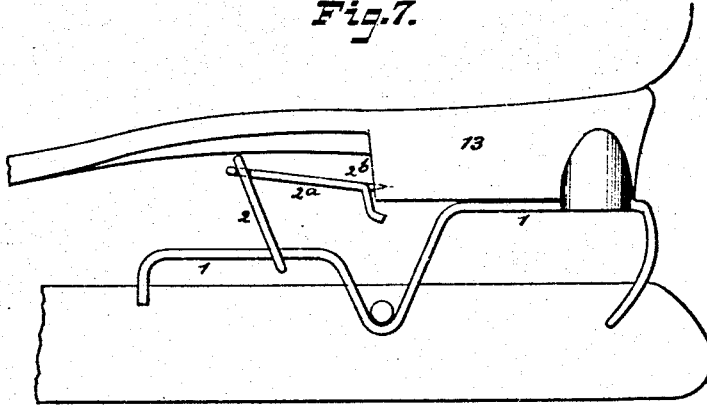


Fig. 8.

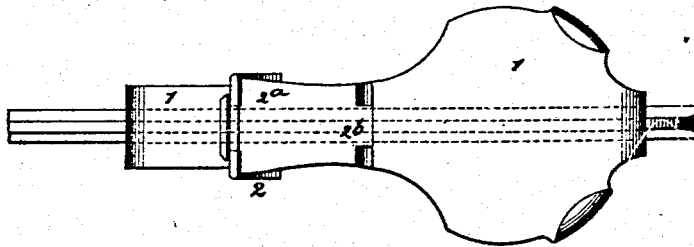
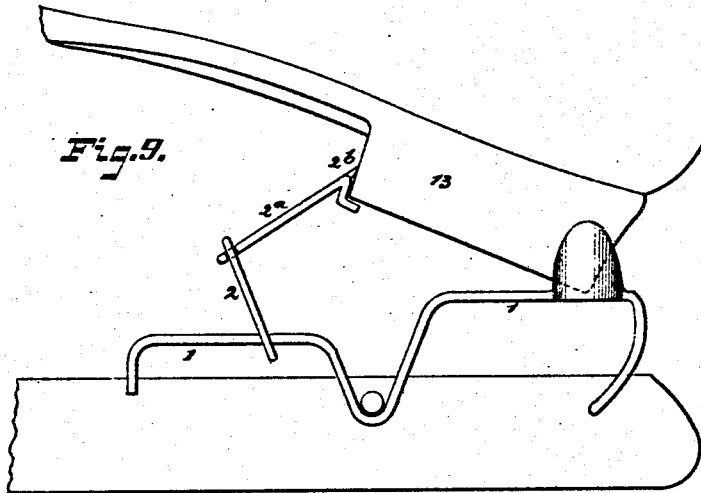


Fig. 9.



WITNESSES:

Gustave Dittend
Robt. H. Marshall.

INVENTOR,

John Forbes.

UNITED STATES PATENT OFFICE.

JOHN FORBES, OF HALIFAX, NOVA SCOTIA, CANADA.

SKATE.

SPECIFICATION forming part of Letters Patent No. 391,136, dated October 16, 1888.

Application filed April 20, 1888. Serial No. 271,309. (No model.)

To all whom it may concern:

Be it known that I, JOHN FORBES, a subject of the Queen of Great Britain, and a resident of Halifax, in the Province of Nova Scotia and Dominion of Canada, have invented certain new and useful Improvements in Skates, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

My improvements consist, first, in a skate, the combination, with a heel-plate, of a heel-clamp so arranged that an automatic clamping of said heel-clamp in a suitable position for clamping upon the boot-heel is obtained at the time of application of the skate to the boot without the aid of serrations, pawls, pinching-screws, adjustment holes and pins, or other devices requiring a previous special setting; second, in a skate, the combination, with a sole plate and clamps, of the spring locking mechanism whereby the sole-clamps are automatically adjusted to and capable of being clamped upon the boot-sole at the time and in the act of attaching the skate to the boot without the necessity for a previous adaptation of said clamps by means of pinching or binding screws or graduated holes or pins or equivalent devices; third, in the construction of the runner—namely, the forward part from about its middle provided with straight sides, the bottom surface of such forward part being curved upward to its toe end, with the remainder of the bottom surface running back to the heel end constructed in a straight line and having the sides of such rear portion of the runner curved to its heel end, such construction being for the purpose of affording curved edges for curved movements on the ice, and at same time giving support under the center of gravity of the body of the skater, thereby preventing tendency to slip backward while performing curved movements; and, fourth, in certain combinations and arrangements of parts, as hereinafter described.

In the drawings, Figure 1 is a side view of a skate to which my improvements are applied. Fig. 2 is a plan view thereof. Fig. 3 is a vertical cross-section taken in the lines x of Figs. 1 and 2. Figs. 4 and 5 are modifications of the mechanism employed for automatically opening and closing the sole-clamps. Fig. 6 is a plan view of the rear portion of the

bottom of the runner. Fig. 7 is a side view of the rear portion of the skate, showing a modification in the construction of the heel-clamp. Fig. 8 is a plan view of the same. Fig. 9 is a side view similar to Fig. 7, showing the heel-clamp in the position it assumes just previous to the heel-clamping operation.

The heel-plate is shown in Figs. 1 and 2 at 1. It extends from the rear of the heel to about the center of the skate. That portion of it which extends forward from the front of the boot-heel is made with parallel edges. This heel-plate passes through the toggle-clamp 2, said toggle-clamp being provided with a slotted hole, so as to embrace and to admit of its moving back and forth upon the front end of the heel-plate.

The slotted hole in the toggle-clamp is intended to be so fitted to the bar or forward portion of the heel-plate upon which it slides that when the skate is in a position to be applied to the boot, and while advancing the skate to the boot sole, the toggle-clamp shall become clamped firmly upon such bar or sole-plate without the aid of serrations and pawls or other device for locking it. The thickness of the toggle-clamp at the part where it is slotted makes a very powerful and durable clamping-lever. The slotted hole in practice so closely fits the bar or forward end of the heel-plate as to secure the object above described. The end of the toggle-clamp which impinges against the breast of the boot-heel may be shaped with a curved end, as shown in Fig. 1, or it may be in the form of a spur, the serrations or teeth upon the brackets or lugs 3 3 back of the heel being largely depended upon as sufficient to secure the heel on the heel-plate, the toggle-clamp 2 operating as a cam to press the heel of the boot against the teeth or serrations so usually placed on the said brackets or lugs 3 3.

The mechanism for actuating the sole-clamps, as shown in Figs. 1, 2, and 3, is as follows:

4 represents a spring-bar of suitable material and strength, made in U shape, having its two ends firmly riveted to the under surface of the sole-plate at the forward portion thereof. The tension of this spring-bar is downward, as shown in Fig. 1.

5 is a bar with its ends bent downward, such

bent ends being passed through and firmly riveted to the spring-bar 4, as shown in Fig. 3. Upon the under edge of this bar 5 are formed serrations or teeth 6 6. There are two sets of these teeth, one on each side of the center line of the skate, and each of said series hooks inward.

The inner ends of the sole-clamps 7 7 are slotted, as shown at 8, and the ends of bar 5 pass through said slots. The extreme inner ends of said clamps 7 7 are bent down at a right angle. That portion of the end of the clamp which extends across the slot has a knife-edge, 9, so as to engage with the teeth 6 6 upon the under side of the bar 5.

The skate upon being applied to the boot-sole and the spring-bar 4 being pressed upward the knife-edges 9 9 of the clamp ends will be disengaged from the teeth 6 6 on bar 5. The clamps 7 7 may now be suitably disposed against the boot-sole and the skate located in the desired position upon the same. The spring-bar 4 may now be released and permitted to act. The teeth 6 6 of bar 5 will thus be caused to engage with the knife-edges 9 9 of the clamps 7 7, and the tension of the spring-bar 4, acting downward, will automatically lock the clamps 7 7 upon the boot-sole, thereby securing the skate in the desired position upon the boot, the heel being at the same time locked by the impinging of the end of toggle-clamp 2 upon the breast of the boot-heel. This latter action is caused by the wedging of the forward portion of the heel-plate in the slot of the toggle-clamp 2, as hereinbefore described.

The sectional views, Figs. 4 and 5, show modifications of the principles above described. The spring-bar 4 acts, however, in an upward instead of a downward direction. Small springs 10 10, attached to the spring-bar 4, engage with the small serrations 6 6, placed on the under side and inner ends of the sole-clamps 7 7, the serrations running in the opposite direction from what is shown in Fig. 3. The bar 5 and the knife-edges on the inner downwardly-bent ends of the sole-clamps shown in Fig. 3 are dispensed with in these constructions.

In Fig. 5 the construction is somewhat modified from that shown in Fig. 4 by substituting small toggles 11 11, hinged in slots of the spring-bar 4, for the springs 10 10, said toggles 11 11 being controlled by springs 12 12, formed out of the upper surface of spring-bar 4.

In the modifications, Figs. 4 and 5, the action of the spring-bar 4 is substantially the same as in the other figures, except that it acts in an opposite direction to either open or close the clamps. The operation of these modified constructions from what has been said with reference to the construction shown in Fig. 3 need not be further described.

The front end of the runner from about its middle or central portion forward to the toe has straight sides, and is curved at its bottom surface in an upward direction to the toe end,

as is usually found in former skate constructions. The remaining portion of the runner is not made with any upward curve on its bottom surface, as heretofore practiced in skate construction, but is formed in a straight line back to its heel end. This rear portion, however, has upon both of its sides a gradual curve or taper back to the heel end, so that at the heel end the runner is quite narrow. The object of this construction is to furnish a better support to skaters while performing evolutions which require the balance to be maintained upon the after part of the skate, while at the same time permitting of the necessary curvature for obtaining graceful curving movements upon the ice, which movements are accomplished only upon the edges of the skate-runner from the middle portion back to the heel end.

In the modification of the heel-clamp shown in Figs. 7, 8, and 9 upon the forward portion of the heel-plate 1 the toggle clamp 2 is made to slide loosely by means of a slide or oblong hole at the lower end of the toggle-clamp, said oblong hole being of such dimensions relative to the portion of the heel-plate upon which it slides, while it may be rapidly moved to and fro to accommodate heels of different sizes, yet becomes clamped upon the heel-plate by any pressure at its upper end. At the upper end of this toggle-clamp 2 is another oblong hole, through which passes the end of the other member of the toggle, 2^a, the last-mentioned hole in the toggle being of such dimensions as to admit of considerable movement of the outer end, 2^b, of the toggle member 2^a to enable said member 2^a to be depressed below a right angle with the toggle 2, as shown in Fig. 7, or to be raised considerably above a right angle with same, as shown in Fig. 9. The end of the member 2^a, after being passed through the toggle 2, is slightly riveted over, in order to prevent its accidental withdrawal. Shoulders are formed upon the toggle 2, which bear against the sides of the toggle member 2^a outside the oblong hole through which the end of the member 2^a passes.

The action of the skate at the parts described and the means for applying same will be apparent upon reference to Fig. 9, in which a boot-heel is represented by 13, the rear portion of said boot-heel being inserted at the rear portion of the heel-plate 1. The upper projections of the heel-plate 1 are brought against the back of the boot-heel, the skate being in an oblique position, bending downward. The toggle-clamp 2 is then moved backward until the toggle member 2^a is at its extremity of admission upward, and engages with the forward end of the boot-heel, as shown at 2^b. The toggle-clamp being then held back and the skate moved upward, pressure will be formed upon the upper end of toggle 2, clamping it firmly upon the part of the heel-plate 1 upon which it slides, and a continuation of the motion of the skate upward will cause the toggle 2 to operate, and the heel of the skate

will be securely fastened to the boot-heel. An adjustment to suit any size of boot-heel within a reasonable limit can easily be made by the movement of the toggle 2 forward or backward upon the heel-plate upon which it slides. The amount of gripping action can be determined by the manufacturer by so limiting the arc through which the toggle member 2^a is permitted to move that the sine of such arc shall give sufficient effect to the clamping mechanism as a whole when in action.

I claim—

1. In a skate, the combination, with the heel-plate, of a heel-clamp, 2, so arranged that an automatic clamping of said heel-clamp in a suitable position for clamping upon the boot-heel is obtained at the time of application of the skate to the boot without the aid of serrations, pawls, pinching screws, adjustment holes and pins, or other devices requiring a previous special setting.

2. In a skate, the combination, with a sole plate and clamps, of the locking-bars 4 and 5, substantially as described, whereby the sole-clamps are automatically adjustable to and capable of being clamped upon the boot-sole at the time and in the act of attaching the skate to the boot without the necessity of a previous adaptation of said clamps by means of pinching or binding screws or graduated holes and pins or equivalent devices.

3. In a skate, a runner having its forward part from about its middle straight on its sides, the bottom surface curved upward to its front or toe end and having on the rear portion curved or tapered sides, and a bottom surface in a straight line to the heel end, substantially as described, for the purpose of giving support under the center of gravity of the body of the skater and affording curved edges for curving movements.

4. In a skate, the heel-clamp 2, slotted so as to embrace the heel-plate 1 or an extension from same, and to clamp thereon in the act of applying the skate to the boot, substantially as described.

5. In a skate, the spring-bar 4, in combination with the serrated bar 5 and the knife-edges 9 9, and the bent-down inner ends of the clamps 7 7, substantially as described.

6. In a skate, the sole-clamps 7 7, the same clasping the boot-sole by a mechanism acting so as to press their inner ends outward from the boot-sole, such ends being held in position relatively by being locked upon an intermediate connecting-bar, 5, substantially as described.

JOHN FORBES.

Witnesses:

W. J. FORBES,
G. H. FORBES.