(No Model.)

2 Sheets—Sheet 1.

J. FORBES.

SKATE.

No. 391,135. Patented Oct. 16, 1888.

Fig. 1.

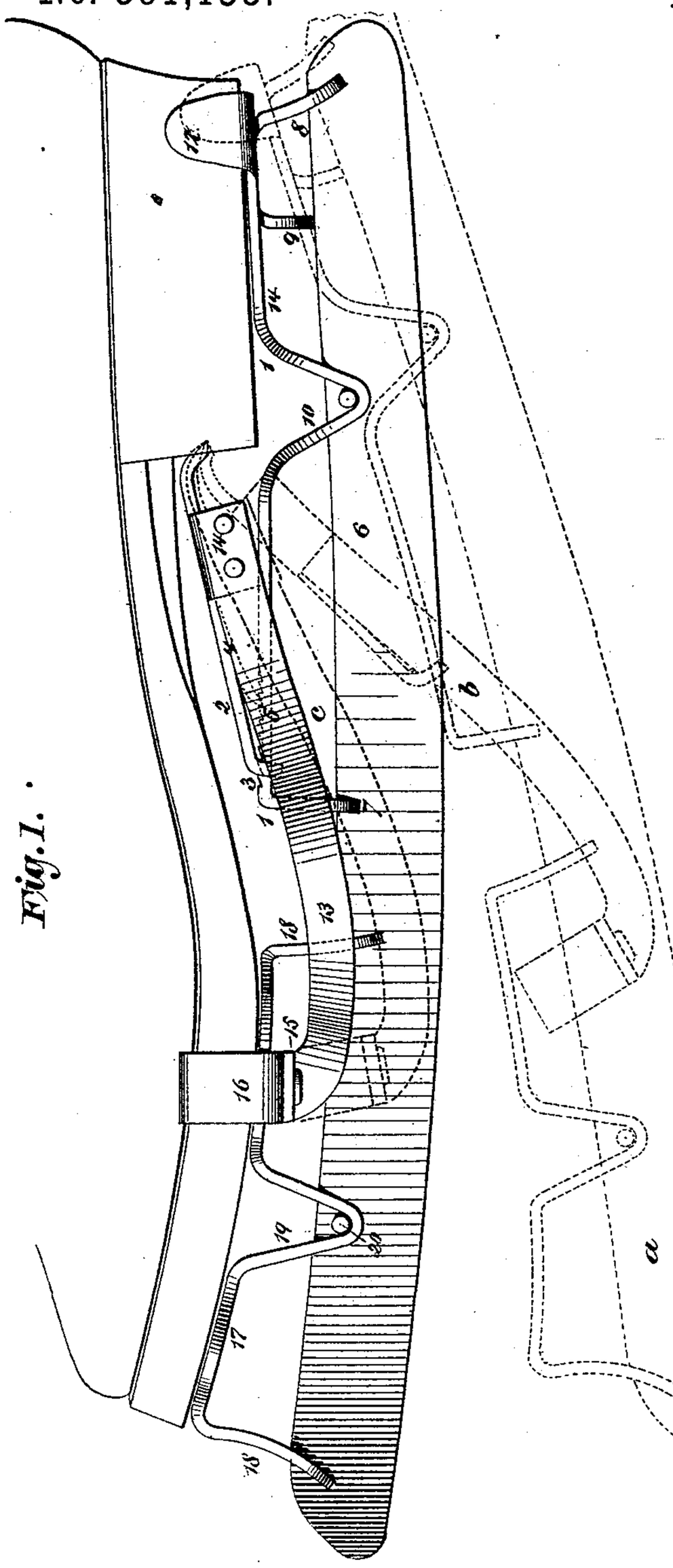
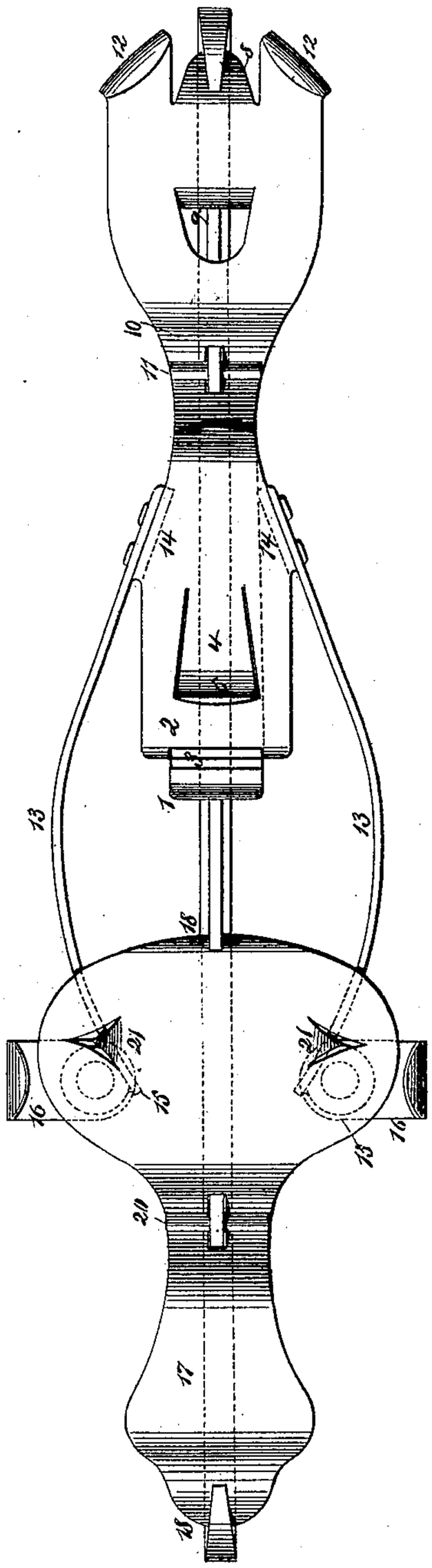


Fig. 2.



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INVENTOR,

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(No Model.) 2 Sheets—Sheet 2.

J. FORBES.

SKATE.

No. 391,135. Patented Oct. 16, 1888.

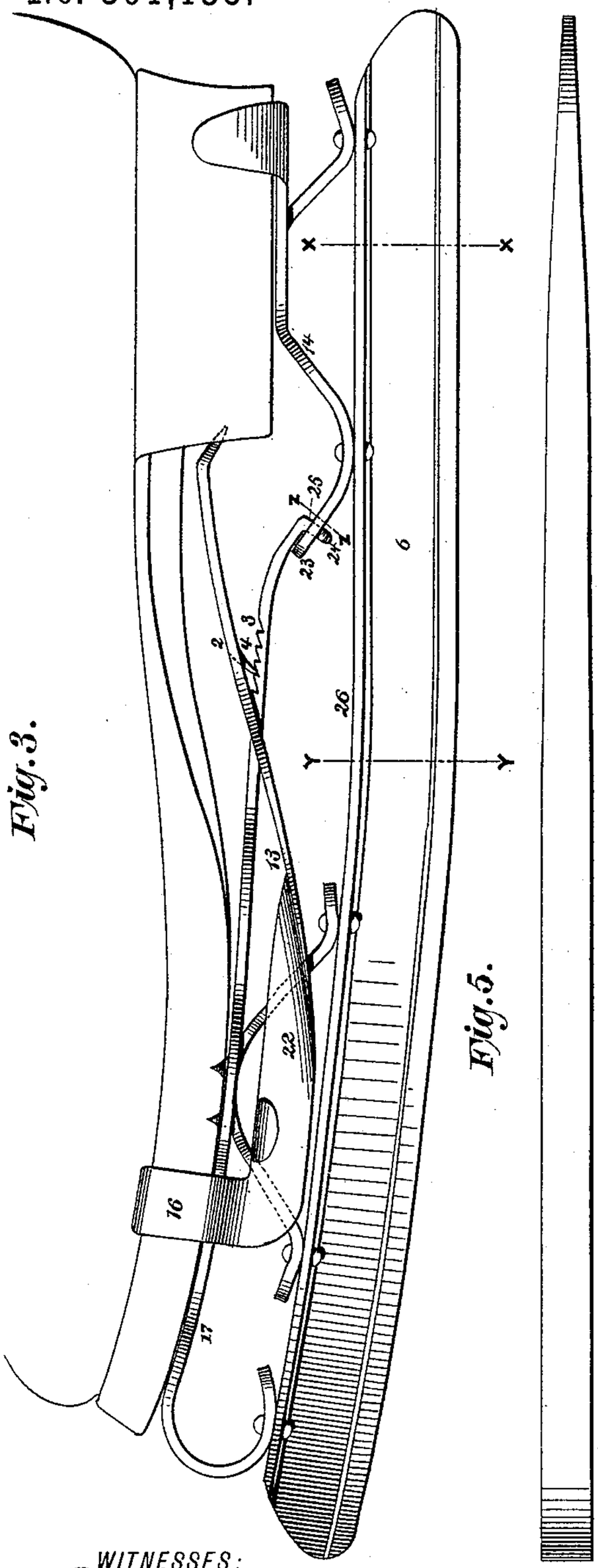

Fig. 3.

Fig. 5.

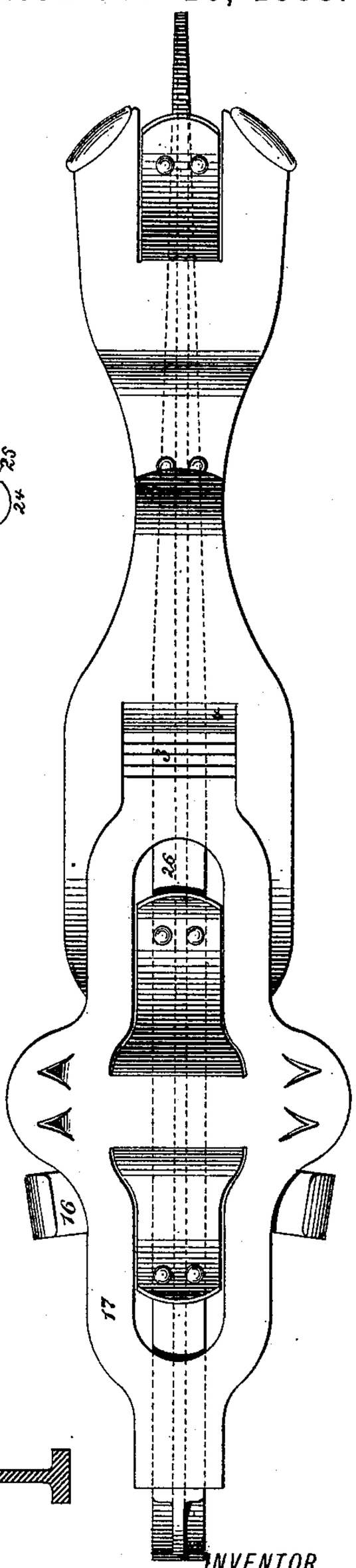

Fig. 4.

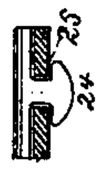

Fig. 8.

Fig. 6. Fig. 7.

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UNITED STATES PATENT OFFICE.

JOHN FORBES, OF HALIFAX, NOVA SCOTIA, CANADA.

SKATE.

SPECIFICATION forming part of Letters Patent No. 391,135, dated October 16, 1888.

Application filed April 18, 1888. Serial No. 271,088. (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 of self-adapting spring sole-clamps with a self-fastening clamp for the breast of the heel, whereby the skate is capable of being clamped to the sole of a boot or shoe without the necessity of any previous setting of the sole and heel clamps; second, in a skate, the self-adjusting spring sole-clamps whereby the skate may be clamped to the sole of a boot or shoe and without the necessity of any previous setting of the sole clamps; third, in a skate, the self-fastening heel-clamp for the breast of the heel, whereby the heel of a boot or shoe may be clamped without the necessity of any previous setting or adjusting of the heel-clamp by pinching or binding screws or similar devices; fourth, in a skate, sole and heel plates constructed by bending down a loop forming a double bracket, such loop being slitted to receive the runner, with a pin passing through the runner and inside the loop for the purpose of securing the runner to the bracket; and, fifth, in certain combinations and arrangements of parts, as hereinafter described.

In the drawings, Figure 1 is a side view of a skate in which my improvements are embodied. Fig. 2 is a plan view of the skate. Fig. 3 is a side view of a skate in which appears a modification of some of my improvements. Fig. 4 is a plan view thereof. Fig. 5 is a bottom view of the runner. Fig. 6 is a vertical cross-section of the runner, taken in the line *x x* of Fig. 3. Fig. 7 is a vertical cross-section of the runner, taken in the line *y y* of Fig. 3. Fig. 8 is a cross-section of the sole-plate, taken in the line *z z* of Fig. 3.

In Fig. 1 the dotted lines show the skate in two stages of the process of applying it to the boot, the lower set of dotted lines, *a b*, showing the position of the skate at the commencement of the act of applying and the upper dotted lines, *c*, showing a later stage of the process of application—viz., when the action of the heel-clamp has been completed and it only remains to draw the sole-clamps up and spring them upon and against the boot-sole, the latter act giving the position shown in the full lines and completing the act of applying the skate to the boot.

Fig. 2 (the plan view) shows the skate as it would appear when detached from the boot.

The heel-plate 1 is shown in edge view upon the elevation, Fig. 1. It extends from the back 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 and is shown in the plan view, Fig. 2, at 1^a, protruding through the spring toggle-clamp 2, said spring toggle-clamp being bent downward at its front end and provided with a slotted hole to admit of its movement back and forth upon the front part of the heel-plate. This parallel or forward part of the heel-plate is provided with a number of serrations or teeth, 3, upon its upper surface, and the spring toggle-clamp 2 is provided with a tongue, 4, partially punched from the plate of which said toggle-clamp is composed. This tongue is left connected with the toggle-clamp at its rear end, and, being bent downward, as shown at 5, gives a spring-pawl, which admits of its engagement at its forward end with one or another of the serrations 3 upon the front part of the heel-plate, as above referred to. The end of the heel-plate, after passing through the slotted hole in the spring toggle-clamp 2, is bent downward at a right angle, and is made to extend downward to the upper edge of the skate-runner 6, and is notched at 7 to receive said edge of the runner. The plate and runner thus connected assist in giving stiffness and firmness to the whole skate. A tongue or projection, 8, is provided upon the rear end of the heel-plate, which, when bent downward and suitably slitted, admits of the runner being inserted therein. A second tongue, 9, is partially punched from the body of the heel-plate and bent downward for the purpose of bearing upon the upper edge of the runner 6, the object being to re-enforce the heel under the line of greatest pressure from the weight of the skater. This latter tongue,

however, may be dispensed with, especially in skates of small sizes. The heel-plate is bent downward in loop form, as shown at 10, forming a kind of double bracket, which, being suitably slitted at its lower end, admits of the insertion of the runner, and the runner, being provided with a hole at the part inclosed in the loop just described, admits of the insertion of a pin, 11, passing through the runner and bearing against the inner and lower part of said loop, thus furnishing a simple and efficient means of securing the heel-plate upon the runner and admitting of an easy means of detaching the parts for any purpose, as may be required. Lugs or ears 12 are also formed upon the back part of the heel-plate, which are bent upward and provided with suitable teeth or serrations, in the manner heretofore used, for grasping the rear portion of the heel of the boot.

Two springs, 13 13, one on each side of the skate-runner, are riveted firmly at their rear ends to the small flanges 14 14, projecting downward from the toggle-clamp 2, and their forward ends are provided with ears 15 15, said ears being bent outward and having holes for the admission of screws or rivets.

The clamps 16 16 are for embracing the edges of the boot-sole. These clamps are connected with the ears 15 15 of the springs 13 13 by means of screws or rivets before mentioned, so as to admit of their swiveling thereon to conform to the sides of the boot sole, as shown.

The springs 13 13 are so shaped and so situated upon the spring toggle-clamp 2 that when the heel of the boot is locked between the heel-clamps said springs will lie below the horizontal plane of the boot-sole. The said springs will thus have a downward as well as an inward force or tendency, and by pressing them outward and upward and engaging them with and upon the edges of the boot-sole the skate will be retained upon the boot in an expeditious and convenient manner.

It will be manifest that a certain spring action and effect will be mutually afforded by the united elasticity of the spring toggle-clamp 2 and the forward part of the heel-plate, both of these parts being composed of steel and suitably shaped to have the effect named.

The sole-plate 17 is suitably shaped at its front and rear ends to admit of being bent downward to form tongues 18 18, which, as in the case of the heel-plate, are suitably slitted to admit of the insertion of the upper edge of the runner. It is also bent downward near its middle part to form a loop, 19, or double bracket, which is also slitted, as is the case with the heel-plate loop; and the runner being at this point provided with a hole and a pin, 20, as in the case of the heel-plate construction; it is by this means secured to the runner or detached therefrom, as may be required.

That part of the sole-plate upon which the sole of the boot more directly rests may be provided with points or spurs 21, which may be either formed therein or may be riveted or otherwise secured thereto, their object being to aid the springs in preventing a lateral movement of the skate upon the foot when once the skate has been correctly placed thereon. These spurs are, however, not essential.

The mode of putting on the skate is so evident from the drawings and foregoing description that no further explanation is considered necessary. It should be mentioned, however, that in order to prevent too great a gripping effect upon the heel from the action of the spring toggle-clamp 2 and its tongue 4 it is intended that in the manufacture of the skates the length of said spring toggle-clamp and its tongue and its relative position with reference to the other parts shall be so arranged that only a certain amount of gripping effect can be produced, no matter at what position the varying sizes of the boot-heels may require the toggle-clamp to be placed with reference to the serrated portion of the heel-plate.

In the skate shown in Figs. 3 to 8, which is a modification, the same combination of mechanical principles is used as in the skate shown in Figs. 1 and 2. The method of construction as regards details is, however, somewhat different, the design in this case being to reduce the number of parts as much as possible, and it is shown how the spring toggle-clamp 2, the side or sole clamping springs, 13 and 22, and the sole-clamps 16, instead of consisting, as in the skate, Figs. 1 and 2, of four separately-made pieces fastened together by means of screws and rivets, may be all combined in one piece, the blank-punching (if it is made from a plate of steel) being suitably shaped, and afterward the side parts may be twisted, as shown at 22 and 16, giving lateral elasticity for opening or expanding the clamps laterally, the sole-clamps 16 16 being also produced upon the same piece and bent upward, outward, and again upward and then inward, so as to embrace and grip upon the boot-sole, as was shown and described with reference to the skate, Figs. 1 and 2.

It is also shown in Figs. 3 and 4 how the front or sole plate, 17, may be extended toward the rear and the teeth or serrations 3 for engaging with the spring-pawl or tongue 4 of the heel-locking device made upon it, instead of being formed upon a prolongation of the heel-plate forward, as shown in Figs. 1 and 2. It is also shown at 23 how the end of the front or sole plate is connected with the heel-plate, the end of the sole-plate being formed in a T-shaped head, 24, the end being bent down. A slot, 25, is punched in a longitudinal direction in the end of the heel-plate. The bent end or T-shaped head is passed through the slot 25 while the parts are detached from the runner, and, being then turned longitudinally, the parts are securely fastened, the rear end of the sole-plate 17 being previously passed through the slot 25 in the spring toggle-clamp 2, before described. In this modification of the skate a runner is shown having a wide flange, 26, formed upon its upper edge, and a

double object is thus gained—viz., that the parts forming the foot-rest may be securely riveted thereto in a very simple manner. The runner is thus prevented from springing sidewise while performing evolutions in which much side pressure is caused, which fault is found in several styles of skates where the foot-rest is constructed in two parts.

I claim—

1. In a skate, the combination of self-adapting spring sole-clamps 13 13 16 16 with a self-fastening clamp for the breast of the heel, substantially as described, whereby the skate is capable of being clamped to the sole of a boot or shoe without the necessity of any previous setting of the sole and heel clamps.

2. In a skate, the self-adapting spring sole-clamps 13 13 16 16, substantially as described, whereby the skate may be clamped to the sole of a boot or shoe without the necessity of any previous setting of the sole-clamps.

3. In a skate, the self-fastening heel-clamp 2 for the breast of the heel, substantially as described, whereby the heel of a boot or shoe may be clamped without the necessity of any previous setting or adjustment of the heel-clamps by pinching or binding screws or similar devices.

4. In a skate, sole and heel plates constructed by bending down therefrom or attaching thereto a loop forming a double bracket, such loop being slitted to receive the runner, with a pin passing through the runner and inside the loop for the purpose of securing the runner to the bracket, substantially as described.

5. In a skate, the combination of heel or sole plates bent down at their ends, such ends being slitted to receive the runner and having a loop bent down from or attached thereto in form of a double bracket, said loop being also slitted to receive the runner, with a pin passing through the runner for the purpose of securing such heel or sole plate onto the runner, substantially as described.

6. In a skate, the heel-clamp 2, with its spring-tongue 4, such heel clamp being bent down and slotted so as to embrace the forward end of the heel-plate 1, the heel-plate containing serrations 3 on its upper surface, substantially as described.

7. In a skate, the springs 13 13, secured firmly at their rear ends to the toggle-clamp 2 and carrying on their forward ends the sole-clamps 16 16, substantially as described.

JOHN FORBES.

Witnesses:
W. J. FORBES,
G. H. FORBES.