

No. 640,264.

Patented Jan. 2, 1900.

S. S. BLACK.
SKATE.

(Application filed Aug. 2, 1898.)

(No Model.)

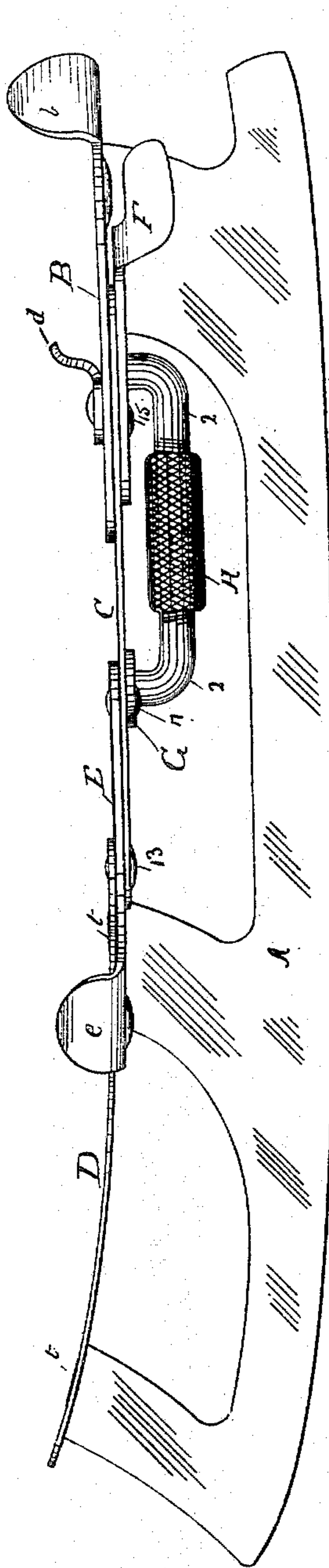


Fig. I

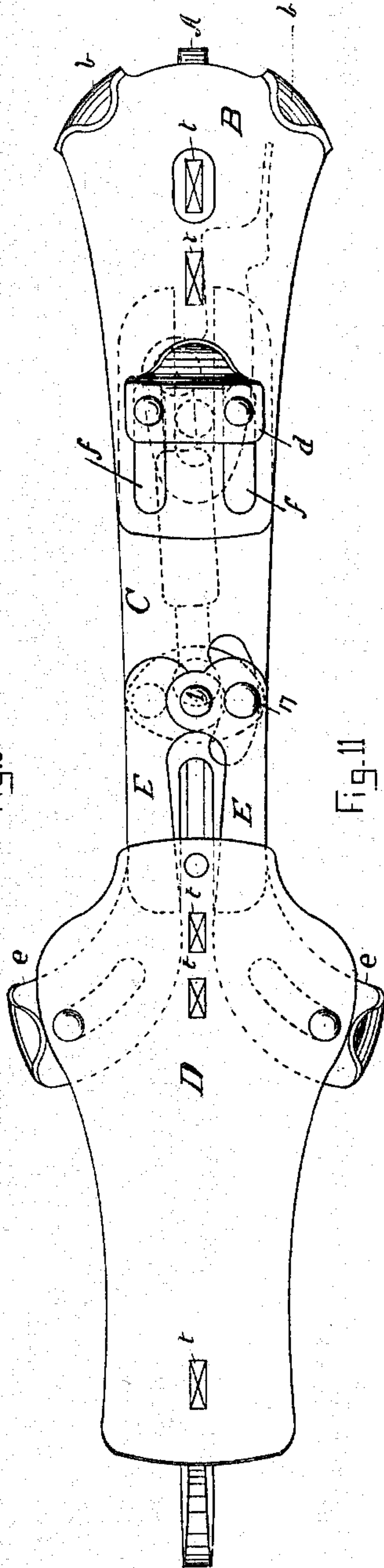


Fig. II

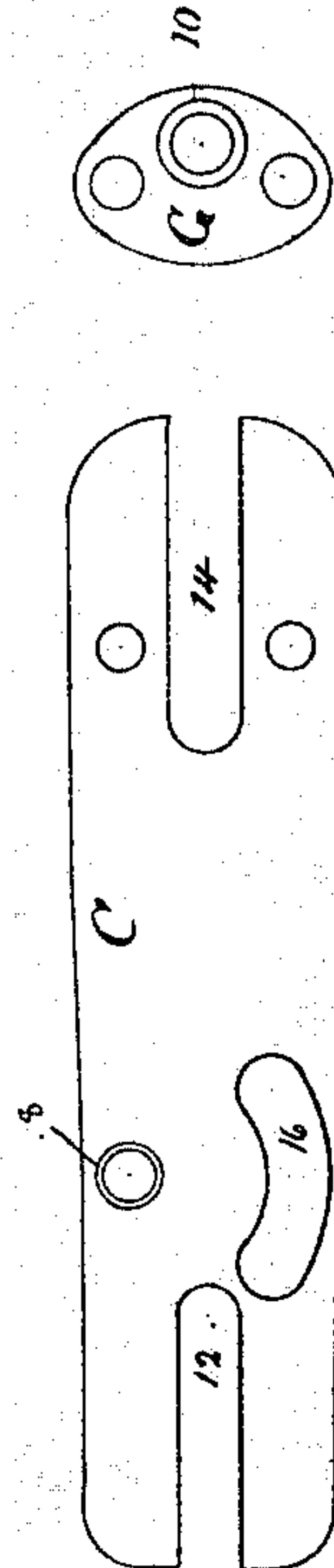
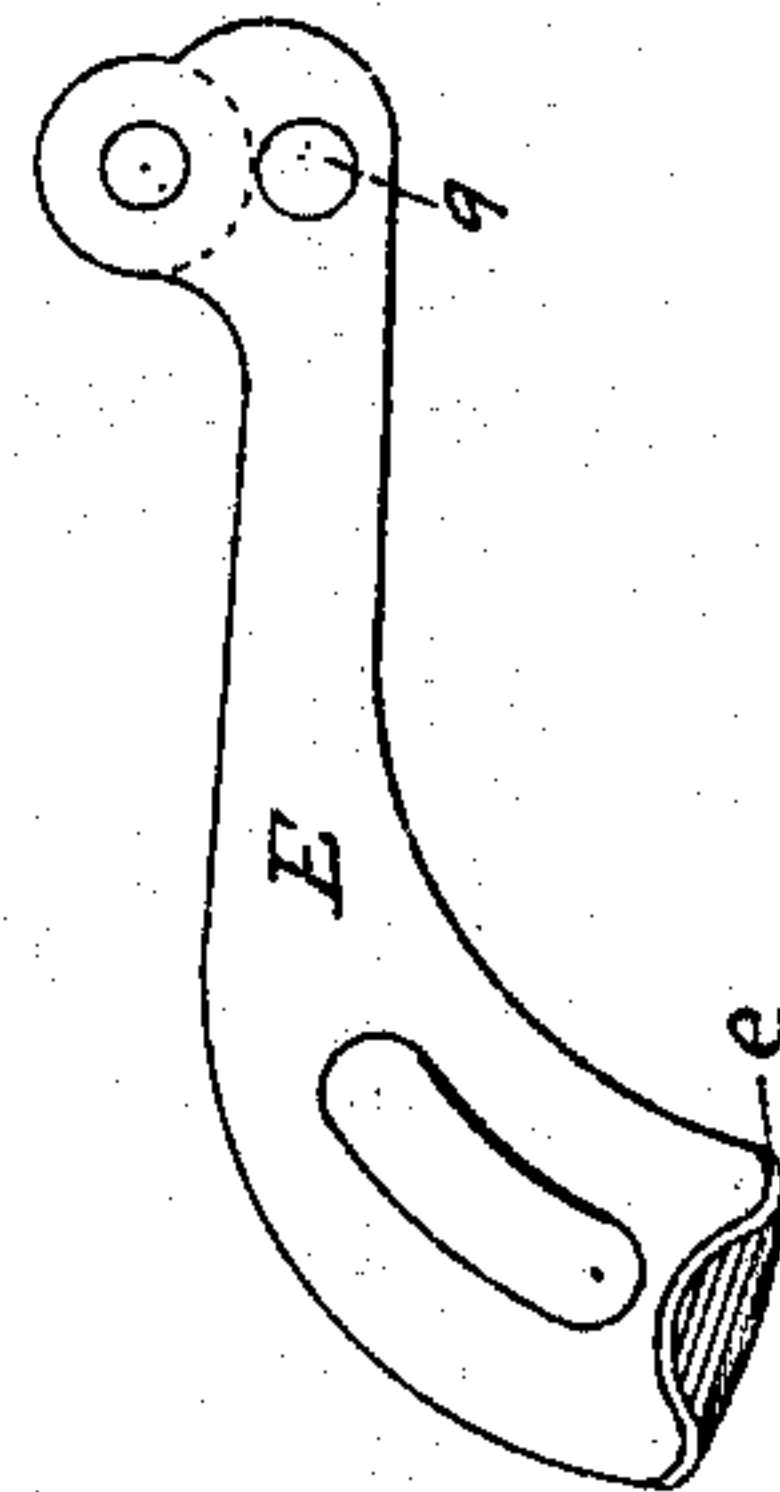


Fig. III



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SKATE.

SPECIFICATION forming part of Letters Patent No. 640,264, dated January 2, 1900.

Application filed August 2, 1898. Serial No. 687,571. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN S. BLACK, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Skates, of which the following is a specification.

My invention relates to improvements in that class of skates which have a single heel-plate with fixed back heel-stops; and my object is to produce a skate of this class having the toe-clamps and the movable front heel-dog arranged to move in the same direction when gripping a shoe and to be operated with a toggle producing a tensile or contracting strain. All single heel-plate skates heretofore produced by other inventors have had their clamps secured on the shoe by a thrust strain, and usually by the toe-clamp moving forward and inward instead of backward and inward, as in the ordinary skate, with double heel-plate and contracting toggle. The first method is objectionable on account of its inartistic appearance and because it necessarily grasps the small and narrow shoe too far forward and the wide or large shoe too far back. It is also objectionable because the spring of the runner under a heavy skater acts to loosen the grip of the clamps, while if a tensile strain is used the effect is to tighten the clamps. In the ordinary construction of skates the heel and toe clamps move in the operation of clamping toward a central point in the skate. This arrangement calls for a comparatively long screw and great amount of screw travel to secure the necessary range of adjustment. One of my objects has been to reduce the amount of screw travel for adjustment to the minimum and at the same time to maintain the very widest range of adjustment. I reach these desirable ends by the mechanism illustrated in the accompanying drawings and set forth in this specification.

Figure 1 is a side elevation of a skate embodying my improvements. Fig. 2 is a plan or top view of the skate. Fig. 3 shows in detail the toe-clamps, the equalizing-lever, and the heel-dog carrier.

Similar letters and figures refer to similar parts throughout the several views.

A is the runner.

B is the heel-plate, provided with back-stops *b b* and secured by tenons *t t* to the runner in the ordinary way.

C is the heel-dog carrier, arranged immediately beneath the heel-plate and extending forward to rear of sole-plate beneath the toe-clamp.

D is the sole-plate, secured to the runner by tenons *t t*, as in the ordinary construction, and E the toe-clamps, attached to the sole-plate by the ordinary method, provided with up-turned dogs *e* in front and jointed at the back ends by a rivet 1.

F is the lever, pivoted on the heel-plate B.

G is the equalizing-lever.

The sleeve H, Fig. 1, together with the two L-screws 2 2 engaged therein, constitutes the coupling. This coupling, pivoted at one end to the lever F, forms the contracting toggle for adjusting and operating the clamping mechanism. In all other skates in which a toggle is used it is pivotally attached to both heel and toe clamps, forming an adjustable coupling between them; but in my construction a radical change is introduced, as the lever member of the toggle is attached to an immovable part of the skate, in this case the heel-plate, and only the adjustable member is attached by one extremity to a movable portion—that is, the clamping mechanism.

The toe-clamps E differ from others in having a hole 9, Fig. 3, in the rear end of one as near the joint as practicable. This opening is provided for the pivotal attachment of the equalizing-lever G, the function of which is to unite three elements—viz., the adjustable member of the toggle, consisting of the sleeve H and the two bent or L screws 2 2, the heel-dog carrier C, and the toe-clamps E—and to equalize between the toe and heel clamping devices the strain applied through the toggle when the skate is secured to the shoe. The equalizing-lever G is preferably made in the form of an oval disk and is provided near its center with a countersunk opening 10 for the head of one of the bent or L screws, which slips into it readily. At each end of the equalizing-lever G is a hole, one for the attachment of the toe-clamps and the other for the attachment of the front end of heel-dog carrier C by means of the pivot-hole 8 in the same. The front end of heel-dog carrier C is

arranged to lie between the equalizing-lever G and the toe-clamps E and is provided with a longitudinal slot 12, Fig. 3, in its front end to embrace a guide-rivet 13, Fig. 1, which passes vertically between the toe-clamps and is secured in rear end of sole-plate. The rear end of heel-dog carrier C is also provided with an open slot 14 to embrace the fulcrum-rivet 15, Fig. 1, between the lever F and the under side of heel-plate B. The front heel-dog *d* rests on front end of heel-plate B, which is provided with parallel slots *ff* for the passage of the rivets, which secure the dog *d* to its carrier C without pinching the heel-plate B between them. Near the front end of dog-carrier C, opposite pivot-hole 8, is a curved slot 16 for the passage of the pivotal rivet 17, Fig. 1, which unites toe-clamps and equalizing-lever G without preventing free longitudinal movement of carrier C. The operating-lever F is pivoted to the front of heel-plate B, with the heel-dog carrier C between the two. It is arranged to lock the movable mechanism by carrying its toggle-joint across the median line of skate before it is arrested by striking the runner. It will be seen from this description that if either of the clamping devices be fixed the other is free to move when the lever is operated. When applied to the shoe, if heel and sole are normally proportioned the equalizer will assume a transverse position. If the heel be abnormally long, the position of the equalizing-lever will be slightly oblique. If heel be abnormally short, it will be oblique in the reverse direction.

The sleeve or thumb-nut H, Fig. 1, is provided with a right and a left hand thread to engage with corresponding threads on the L-screws 2 2. These are called "L-bolts" because the neck or head ends are bent at right angles to the body or threaded portion. This construction furnishes ready-made pivots to unite the lever F and the clamping mechanism, thus avoiding the customary riveting of pivoted nuts. An especial merit of this construction is that the opening of the lever through a reasonable arc—say ninety or one-hundred degrees—always secures full and positive opening of both heel and toe clamps, for the reason that they move in the same direction, while in the ordinary construction when the heel and toe clamps are united by the interposition of a toggle the opening is in most conditions of adjustment not positive, as the heel-clamp may be wide open while the toe is closed, or vice versa, necessitating a manual adjustment before the skate can be placed on the shoe.

I am aware that turnbuckles have previously been used in the construction of skates; but they have not been arranged with bolts having their necks bent at right angles to their bodies to act as pivots.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a skate having sole-plate and toe-clamps slidably attached thereto and con-

nected with the operating and adjusting mechanism, the fixed heel-plate provided with back heel-stops and anterior parallel slots in combination with a reciprocating front heel-dog arranged to slide thereon, and to be suitably connected with the adjusting and operating elements.

2. In a skate having sole-plate and toe-clamps which grip by a backward movement and means for adjusting and operating the clamps, the front heel-dog arranged to slide on anterior portion of a fixed heel-plate, and provided with suitable connection with a sliding dog-carrier arranged to slide beneath the heel-plate, and provided with suitable connection with the adjusting and operating mechanism.

3. In a skate provided with sole-plate and toe-clamps which close by a backward movement and back-stops on a fixed heel-plate, the anterior heel-dog arranged to slide on front portion of heel-plate and to be connected with a longitudinally-reciprocative plate arranged to slide on the under side of heel-plate and above the operating-lever pivoted thereto, and to have an operative connection with the adjusting and locking mechanism.

4. In a skate provided with heel and sole plates and clamping-dogs and a lever for operating the clamping and adjusting mechanism, the adjusting-screws herein described and illustrated, having their head ends arranged at right angles to their threaded portion.

5. In a skate having heel and sole plates and means for clamping a shoe thereon, the pivotal adjusting-bolt herein described and illustrated, having the neck curved to bring the top of the head in a plane substantially parallel to the longitudinal axis of the threaded portion.

6. In a skate provided with heel and sole plates and dogs for securing it to the shoe, the toggle having its lever member pivotally fulcrumed on a fixed heel-plate, and its adjustable member arranged to couple or connect the lever with the clamping mechanism.

7. In a skate having heel and sole plates and movable jaws for securing it to the shoe, the adjusting and locking mechanism herein illustrated, consisting of a lever and a turnbuckle provided with bolts having bent necks arranged to form pivotal connections for said turnbuckle with lever and with clamping mechanism.

8. In a skate provided with heel and sole plates and operative dogs for securing it to the shoe, the adjusting mechanism herein described and illustrated, consisting of a sleeve or thumb nut having a right and a left hand thread, and screws adapted to engage therewith, said screws having their necks curved to bring the tops of their heads in a plane parallel to the long axis of said screws, and having their necks arranged to serve as pivots to connect the adjusting mechanism and clamping devices in an operative whole.

9. In a skate provided with heel and sole plates and having operative dogs for securing it to the shoe, the equalizing-lever pivoted by one extremity to the toe-clamps, and by the other extremity to the heel-dog carrier, and provided with an intermediate pivotal connection with the adjusting and locking mechanism.

10. In a skate having sole-plate and fixed heel-plate with back heel-stops and a movable front heel-dog, the equalizing-lever arranged to pivotally connect the heel-dog carrier and the pivotally-united toe-clamps, and to pivotally unite therewith the adjustable member of the operating-toggle.

11. In a skate having sole-plate and clamps and fixed heel-plate with back heel-stops and a movable front heel-dog, the equalizing-lever arranged to connect the heel-dog carrier and toe-clamps pivotally, and to unite therewith pivotally the adjusting and operating toggle.

12. In a skate having sole-plate and fixed heel-plate with back heel-stops, and toe and heel clamps arranged to move backward in the clamping operation, the equalizing-lever connecting pivotally the toe and heel clamping dogs and provided with a central pivotal connection with the operating and adjusting combination.

13. In a skate having heel and sole plates and clamping-dogs arranged thereon, the longitudinally-reciprocating heel-dog carrier in combination with the sliding equalizing-lever arranged to connect it pivotally with the toe-clamping mechanism, and with means for adjusting and operating the whole.

14. In a skate having sole-plate and fixed heel-plate with back heel-stops, the heel-dog carrier arranged with a guide-slot to embrace the lever-fulcrum rivet beneath the heel-plate, in combination with an equalizing-lever arranged to connect it pivotally with the toe-clamping mechanism, and with means for adjusting and operating the whole.

15. In a skate provided with sole-plate, fixed back heel stops and plate, the front heel-dog carrier having a slot in its rear end for the passage of the lever-fulcrum rivet, an upward-projecting dog attached thereto and surmounting the heel-plate to embrace the front of heel, and means for guiding its front end, in combination with an equalizing-lever pivoted thereto by one extremity, and pivotally jointed at its other extremity to the rear of toe-clamps, and an operating-lever adjustably connected with the equalizing-lever near its center.

16. In a skate provided with sole-plate and fixed back heel stops and plate, the toe-clamps and heel-dog carrier united by pivotal connections to opposite ends of an equalizing-lever

provided with a central pivotal connection with an adjustable toggle arranged to operate heel and toe clamping mechanism simultaneously.

17. In a skate provided with sole-plate and fixed back heel stops and plate, the toe-clamps pivoted at their rear ends to an equalizing-lever, an equalizing-lever pivotally connected at one end with the toe-clamps, and by the other end to the heel-dog carrier, the heel-dog carrier arranged to reciprocate freely, adjustable pivotal connection between the equalizing-lever and operating-lever, and an operating-lever pivotally connecting the adjusting mechanism and a fixed part of the skate.

18. In a skate provided with sole-plate and fixed back heel-stops, the toe-clamps pivotally jointed at their rear ends and provided at one side of said joint with an aperture for the pivotal connection of an equalizing-lever, an equalizing-lever pivotally connected by one extremity to the toe-clamps, and by the other to the heel-dog carrier, arranged to have free longitudinal movement between the equalizing-lever and the toe-clamps in front, and between the heel-plate and operating-lever behind, the operating toggle-lever pivoted to the fixed heel-plate, and the adjustable coupling uniting the operating-lever and the equalizing-lever.

19. A skate with fixed back heel-stops, rearwardly-closing heel-dog, rearwardly-closing toe-clamps, an automatic divider of clamp strain coupling heel-dog with toe-clamping mechanism, and actuating mechanism connecting the movable parts with fixed heel-plate.

20. In a skate, the fixed back heel-stops; the rearwardly-closing heel-dog; the rearwardly-closing toe-clamps; equalizing means connecting the heel-dog with the toe-clamps; and means for simultaneously actuating the heel-dog and toe-clamps in the same direction.

21. In a skate, the fixed back heel-stops; the rearwardly-closing heel-dog; the rearwardly-closing toe-clamps; equalizing means connecting the heel-dog and toe-clamps; and actuating means connecting the equalizing device with a fixed portion of the skate.

22. In a skate, the anterior heel-dog constructed and arranged to move backward synchronously with the backward-closing toe-clamps in the operation of clamping a shoe thereon; an equalizing connection uniting toe and heel clamps; fixed back heel-stops; and adjustable means for operating and locking the movable parts.

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Witnesses:

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JESSIE B. MILLS.