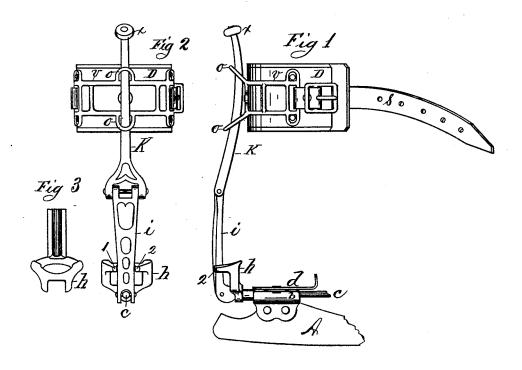
## E. H. BARNEY. Ankle-Supports for Skates.

No. 214,231.

Patented April 15, 1879.



Witnesses Mundo Chapin H. A. Chapin

Everett & Barney Bybhapin + Co Atty's

## UNITED STATES PATENT OFFICE.

EVERETT H. BARNEY, OF SPRINGFIELD, MASSACHUSETTS.

## IMPROVEMENT IN ANKLE-SUPPORTS FOR SKATES.

Specification forming part of Letters Patent No. 214,231, dated April 15, 1879; application filed February 3, 1879.

To all whom it may concern:

Be it known that I, EVERETT H. BARNEY, of Springfield, county of Hampden, and State of Massachusetts, have invented new and useful Improvements in Ankle-Supports for Skates, which improvements are fully set forth in the annexed specification and in the accom-

panying drawings.

My invention has for its object the construction of such an ankle-support for a skate as will, while serving perfectly to keep the foot from turning sidewise, allow an entire freedom of movement of the leg below the knee; and it consists of a lever, which is hinged to the top end of the cam-lever shown and described in my Patent No. 187,584 of February 20, 1877, which cam-lever rises vertically behind the heel, and of a looped ankle-strap, through which the first-mentioned lever has a free movement vertically, and also of a peculiarly-constructed heel-clamp adapted to operate with said cam-lever to serve the object of this invention, as above set forth.

Referring to the drawings, which consist of three figures, Figure 1 is a side elevation of the heel of a skate and my improved ankle-support thereto attached. Fig. 2 is a rear elevation of the heel-clamp, cam-lever, hinged lever, and looped ankle-strap. Fig. 3 is a view

of the heel-clamp.

In the drawings, A is the heel end of the skate-runner. b is a hollow heel-clamp recess; c, a section of a fastening-rod. d is the heel-plate. h is the heel-clamp. i is the cam-lever. k is the hinged lever. k is the ankle-strap. k or are metallic loops secured to strap k. k is

a buckle-strap.

The construction and operation of the camlever i, heel-clamp h, heel-clamp recess b, and fastening-rod c are fully set forth in my aforesaid patent of 1877, wherein it is shown that the shape of the shank of heel-clamp h and the recess b, in which it works, are such that they only permit the heel clamp to move longitudinally, and that it is maintained in the position vertically shown in Figs. 1 and 2.

To make heel-clamp h serve the purpose of supporting cam-lever i in a vertical position, as shown, I add to it the rearwardly-projecting arms 1 2, between which cam-lever i rises up when the skate is fastened to the boot.

Cam-lever i is made so that the lower end of lever k may be hinged to it, as shown.

The ankle-strap D is made of leather or any other suitable flexible material, and to it is secured the metallic yoke v, bearing on its rear side the projecting loops o o. The front ends of yoke v are so constructed that the buckle and buckle-strap may be secured thereto, making the ankle-strap D serve as a cushion between the ankle and the yoke; and, if desired, the interior surface of said ankle-strap may be padded to make it more easy for the wearer.

After having constructed the above-named parts as described, the ankle-strap is secured to lever k by slipping loops o o onto it, and by riveting a collar, x, onto its upper end.

It will be found that the ankle-strap thus connected to lever k has a free up-and-down movement on said lever, and that the curved form of lever k and the elongated form of loops o o, combined with the freedom of movement just named, contribute to give to strap D a free longitudinal movement toward and from the toe of the skate, while the loops slide on lever k.

My ankle-support is fastened to the ankle and operates as follows, viz: First, the skate is secured to the boot through the operation of rod c, heel-clamp h, and cam-lever i, as described in my aforesaid patent of 1877, and when, by the final movement of the cam-lever upward against the heel to complete the fastening operation, said lever enters between arms 1 2 on the rear side of the heel-clamp, it is firmly retained by said arms in a vertical position. The skate being now firmly secured to the boot, lever k, and with it ankle-strap D, is brought up into about the position shown in Fig. 1, and strap D is buckled tightly around the ankle, care being taken to secure it far enough below the end of lever k to permit of the free swing of the leg forward without bringing the upper loops, o, against collar x.

Thus secured to the boot, it will be seen that the skate, with its cam-lever *i*, before strap D is buckled to the ankle, may have a lateral rolling motion from the bottom edge of the runner upward, caused by the flexure of the ankle-joint; but when the ankle-support is fastened to the leg as above described all such

rolling motion is prevented, the skate being held by lever k and loops o o, through their connection with cam-lever i, so that nearly all of any sidewise motion that the skate may have must come from a slight lateral flexure of the knee-joint, and not of the ankle-joint; but while lateral motion is prevented a perfectly free back and forward motion of the knee-joint is permitted by allowing lever k to be movable vertically through loops o on strap D; and it will be observed that with nearly every step of the skater the upward and downward movement of the toe of the skate causes said action of lever k.

In applying my improved ankle-support to skates, in which rod c is operated by a key instead of by cam-lever i, I cast the heel-clamp h with an upwardly-projecting arm thereon, substantially like cam-lever i, and hinge to the top of said arm lever k, as in the construction shown herein, fitting thereto strap D, with yoke v and loops o o.

A modified construction of the hinged levers i and k may be employed in place of those two levers without departing from the principles of their operation, consisting of a single lever of the length of those two combined, made of

some metal that would permit of forming a thin spring-spot in it about where the hinge is, between the two levers. This construction would make a lever not flexible laterally, but tolerably flexible in a direction toward and from the toe of the skate.

What I claim as my invention is-

1. An ankle-support for a skate, consisting of levers i and k, hinged together end to end, and ankle-strap D, provided with loops o o, arranged to inclose lever k loosely, said lever i being attached to the skate at the rear of the heel-plate, and arranged to be maintained in a position substantially perpendicular to the skate-runner, substantially as and for the purpose set forth.

2. The combination of ankle-strap D, provided with loops o e, hinged levers i and k, and heel-clamp h, substantially as set forth.

3. The ankle-strap D, having secured thereto loops oo, substantially as and for the purpose set forth.

EVERETT H. BARNEY.

In presence of— H. A. Chapin, Wm. H. Chapin.