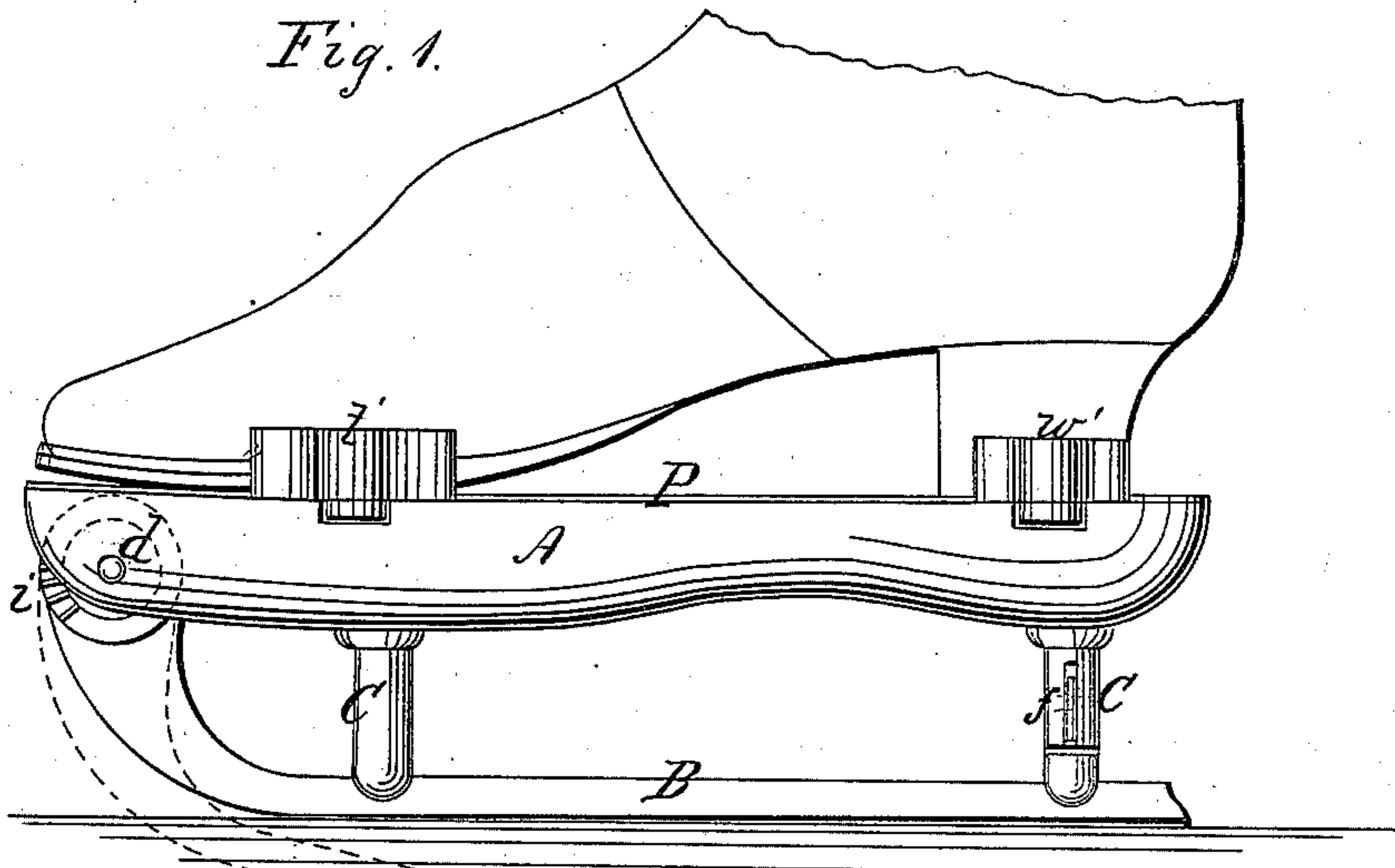
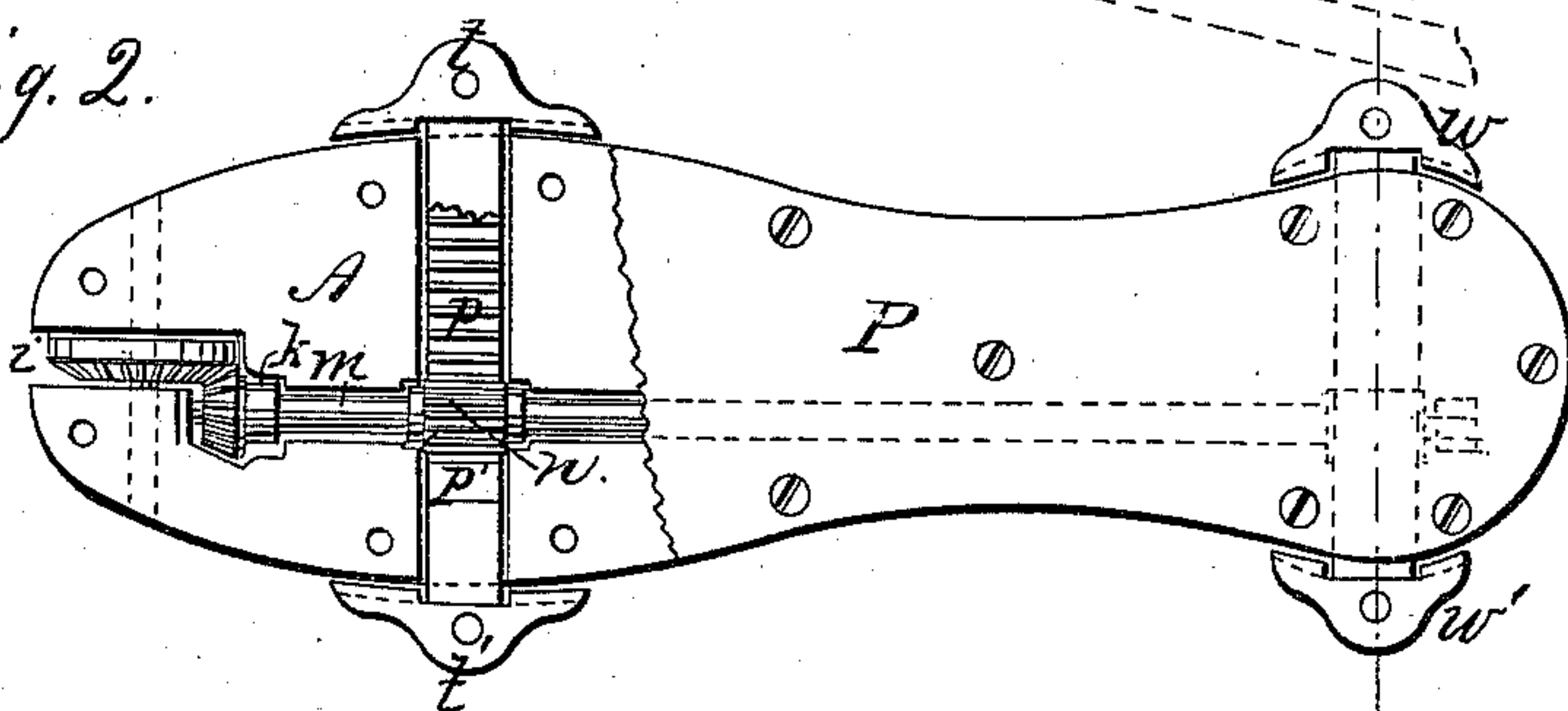


*H. W. Sanford,*  
*Skate,*  
*No. 63,946,* *Patented Apr. 16, 1867.*

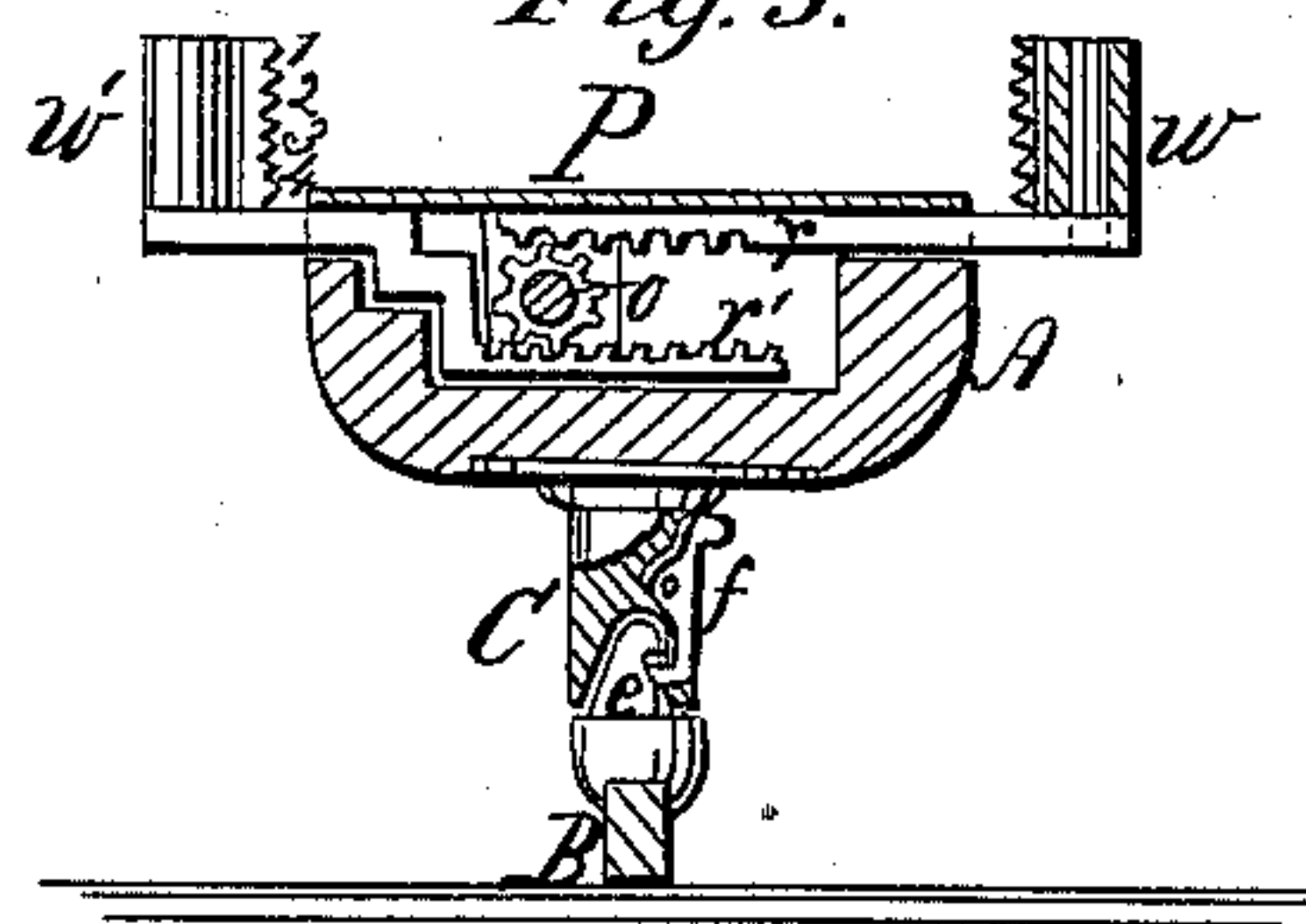
*Fig. 1.*



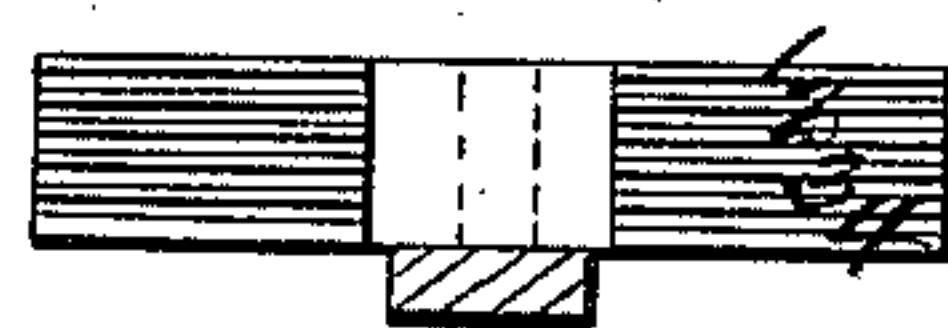
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Witnesses;*  
*Andrew de Lacy*  
*W. H. Bishop*

*Inventor;*  
*H. W. Sanford*  
*By his attorney*  
*J. N. McIntire*

# United States Patent Office.

H. W. SANFORD, OF THOMASTON, CONNECTICUT, ASSIGNOR TO HIMSELF  
AND HORACE SMITH.

*Letters Patent No. 63,946, dated April 16, 1867*

## IMPROVEMENT IN SKATES.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, H. W. SANFORD, of Thomaston, of Litchfield county, in the State of Connecticut, have invented certain new and useful improvements in Skates; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My invention relates to a novel method of clamping or securing the skate to the boot or shoe of the skater, and has for its main object to accomplish this end in a simple, effective, and reliable manner; and to this end my invention consists in so constructing the skate iron or runner, and arranging it with the other parts of the skate that the said runner may be employed, through the medium of intermediate devices, to move and hold in place the jaws or clamps which confine the skate-stock on the foot of the skater, as will be presently more fully explained.

To enable those skilled in the art to make and use my invention, I will proceed to more fully describe the construction and operation of my improved skate, referring by letters to the accompanying drawings, in which—

Figure 1 is a side elevation of one of my new kind of skates.

Figure 2 is a top view of the same.

Figure 3 is a vertical section at the line *x x*, fig. 2; and

Figure 4 is a detached view of one of the clamping jaws.

In the several figures of the drawings the same part will be found to be designated by the same letter of reference.

In fig. 2 I have illustrated the top plate of the stock as if broken away partially, so as to show the mechanism beneath it; and in fig. 1 I have shown the runner, in red lines, in the position it assumes when the clamps or jaws are drawn back or open to release the foot of the skater from the skate.

A is the stock or body of the skate, which I have shown made of wood, about the ordinary shape. B is the runner, or "iron" of the skate, and C *c* are the stands or studs which sustain the said runner. The runner B is not rigidly or permanently attached to the supporting stands C *c*, as is customary, but is only coupled to them and securely held by them when the skate is in use, in the following manner: The runner B is hung at its forward end in the front end or toe of the stock A, on a pivot or arbor, *d*, on which arbor it turns freely when necessary. The forward stand *c* is slotted out at its bottom or lower end to receive the thickness of the "iron" B, as clearly shown, (fig. 1,) and the rear stand C is formed with a hollow or cavity to receive a teat, *e*, on the back end of runner B, and is provided with a latch-spring or catch, *f*, to catch into a notch in said teat *e*, and thereby hold or retain said teat. By this mode of construction it will be seen that the runner B, when in place for skating, as seen at fig. 1, will be securely locked in position by catch *f e*, and will be firmly sustained laterally by the teat *e* extending up into C, the iron itself being let into *c*, and the arbor *d* holding said runner to the toe of the stock A. By simply pressing with the thumb or finger on the upper end of spring-latch *f* the teat *e* will be released from stand C, and the runner B can then be vibrated on its arbor *d*, or thrown down, as shown in red lines at fig. 1.

The object and effect of thus throwing the runner down I will now explain. The forward end of said runner, where it is encased within the stock A, is formed at *i*, with a sector bevel-gear, and the teeth of this sector, or partial bevel-gear, mesh into or engage with the teeth of a bevel pinion, *k*, on the forward end of a shaft, *m*. This shaft *m* is mounted in suitable bearings in the stock A, and is arranged longitudinally and centrally within said stock, and below its upper surface. On the said shaft *m* are two spur pinions *n* and *o*, which engage with four racks *p p'* and *r r'*, and to the outer ends of these racks are attached the clamping jaws *t t'* and *w w'*. The racks, it will be seen, are arranged in pairs and so as to engage on top and beneath with the pinions, and are so located that the two sets of clamping jaws shall come, one set, *t t'*, in the proper position to clasp or clamp the sole of the shoe of the skater, near the toe on the side, and the other set, *w w'*, in position to clamp the heel of the shoe laterally. The heel clamps or jaws *w w'* I have shown as pivoted to the outer ends of the rack bars *r r'*, so that they may swivel, and thus perfectly accommodate themselves to the shape



of the heel of the shoe worn by the skater, (see figs. 2 and 3.) Of course the peculiar manner of forming or attaching the clamping jaws is not essential to my invention, and all such details of construction may be varied without departing from the spirit of my invention. The sliding or reciprocating rack  $p p'$  and  $r r'$  are arranged in suitable seats or bearings within the stock A of the skate, as shown in the drawings, and a top plate, of metal, P, corresponding in contour to the shape of the top of stock A, is placed on the upper surface of the latter, and secured thereto by screws, to retain in proper place the working part or mechanism within the stock.

It will be understood that the gist of my invention rests in the idea of working the clamps or jaws, between which the shoe or boot sole is confined, by means of a hinged or swinging runner, and that, although I have shown and described only one way of carrying out this idea, it may be embodied in a variety of modifications, all subject to my said invention. In lieu of the gears and racks, other mechanical devices may be embodied to effect the proper motions desired to be given to the clamping jaws, and such devices may be operated on by the swinging or vibrating runner in a manner similar to the operation of the latter upon the said jaws through the medium of racks and pinions. The jaws or clamps, it will be seen by reference to fig. 4, are made with longitudinal serrations 1, 2, 3, &c., so as to securely grip the leather of the shoe sole and hold on firmly.

Having explained the construction and operation of all the parts of the skate, its application to the foot may be briefly explained as follows: To put on the skate, press down the upper end of latch  $f$ , and throw down the runner B into position shown in red lines at fig. 1, whereby the clamping jaws will be separated or moved away from each other to the maximum extent, place the foot on the plate P of stock in the proper position, and then press the runner back to its bearings and so that its rear end will be re-secured to the stand C. By thus forcing the runner back to its place the jaws will be forced together, after the fashion of the jaws of a vise, and the heel and sole of the shoe of the skater will be firmly held between them. It will be seen that by having the runner hinged at its forward end the effectiveness of its leverage may be conveniently increased to tightly grip the shoe sole, by the skater resting his weight on the heel or rear end of said runner, to force it home to its seat.

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

The vibratory or lever runner B, in combination with the sliding clamping jaws  $t t'$  and  $w w'$ , and the skate stock, the whole constructed in the manner and operating as hereinbefore described and for the purpose set forth.

In witness whereof I have hereunto set my hand and seal this third day of January, 1867.

H. W. SANFORD. [L. S.]

Witnesses:

R. L. HULL,

J. B. CHADWICK.