

(No Model.)

S. S. BLACK.  
SKATE.

No. 446,421.

Patented Feb. 17, 1891.

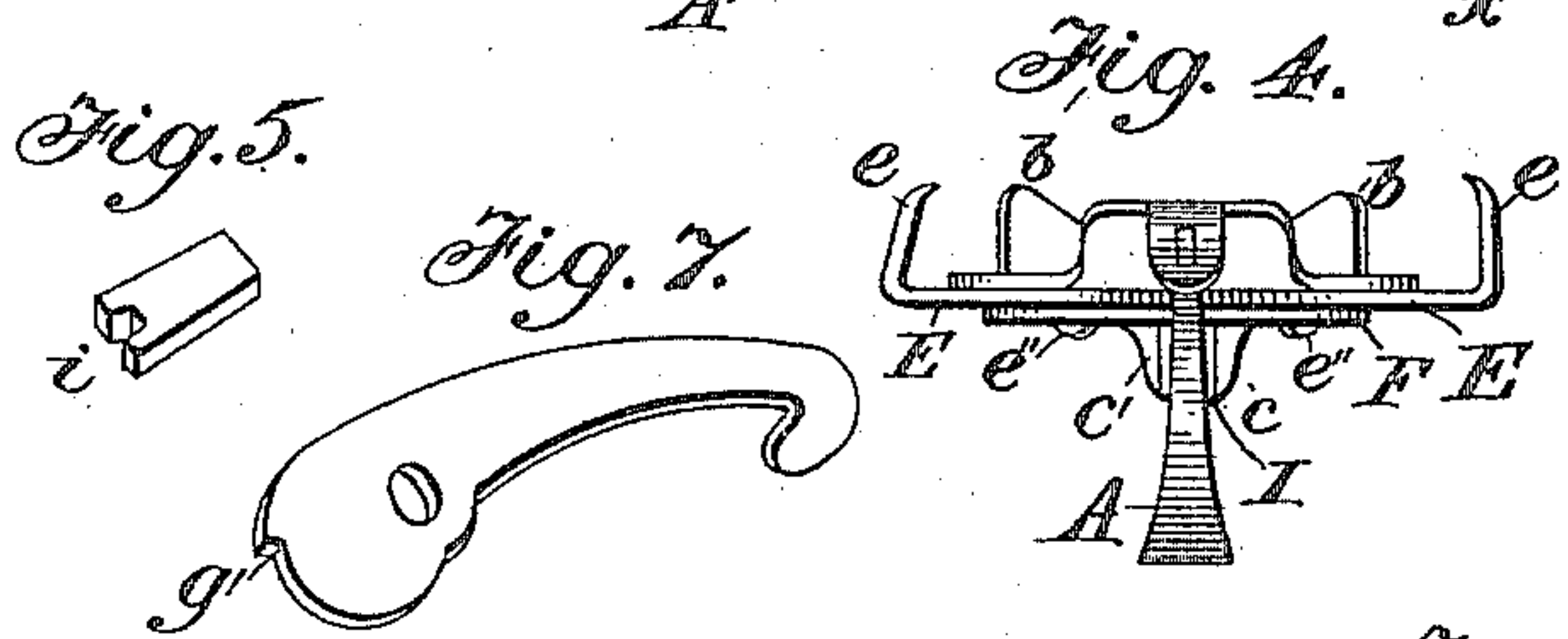
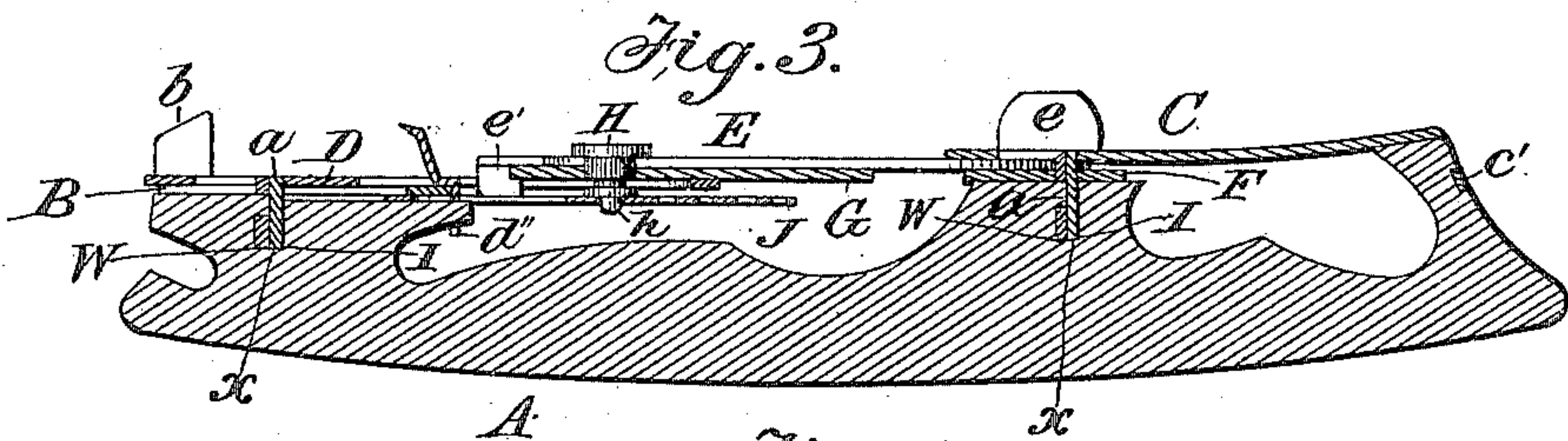
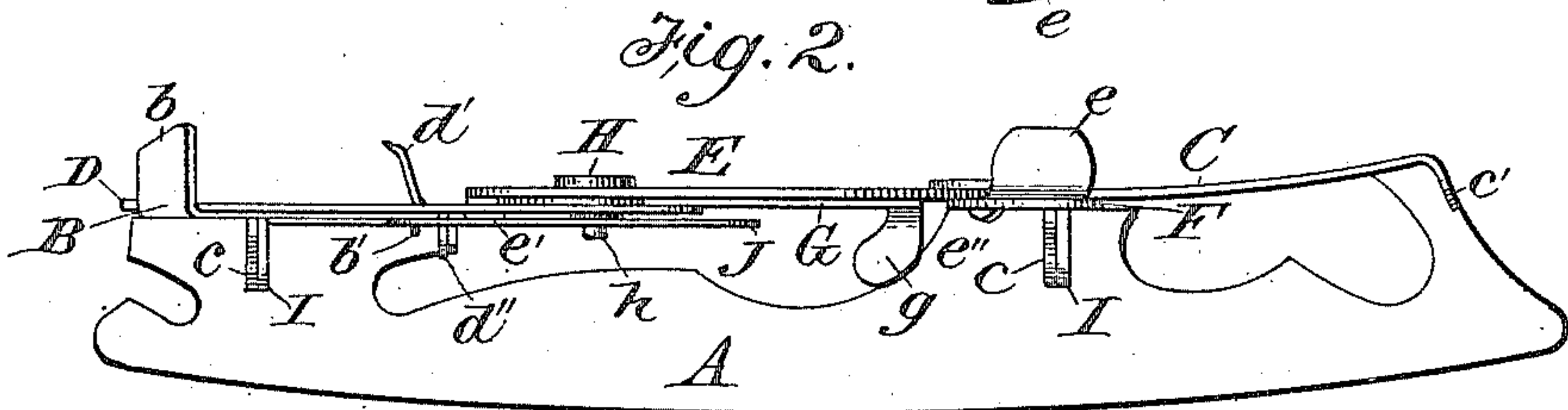
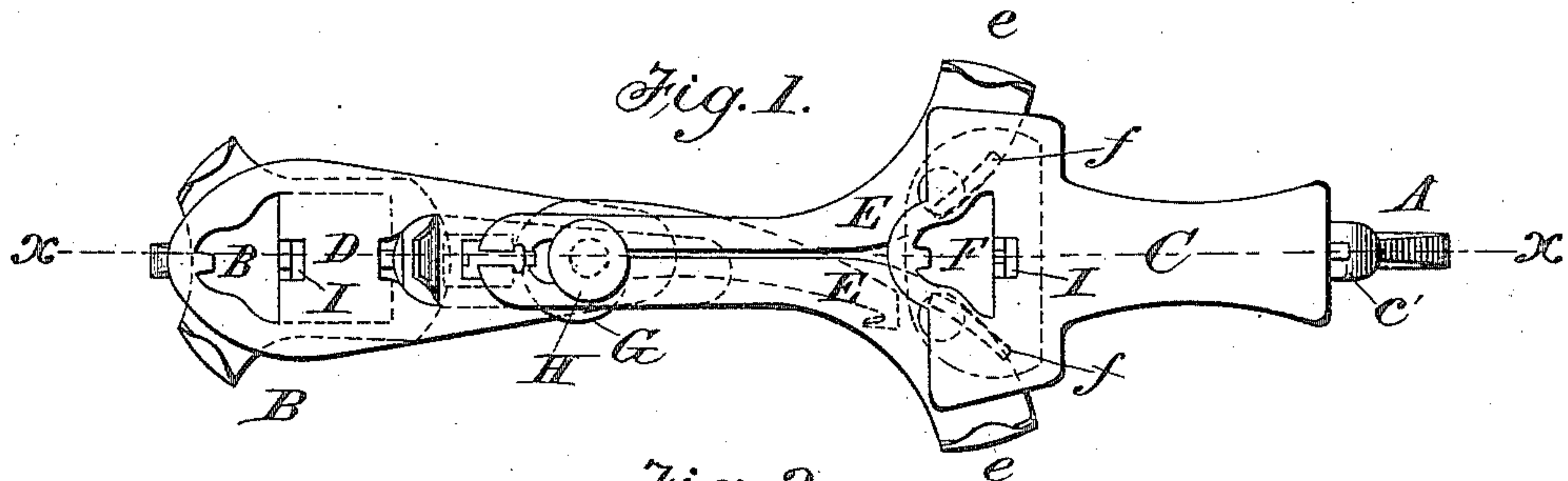


Fig. 7.

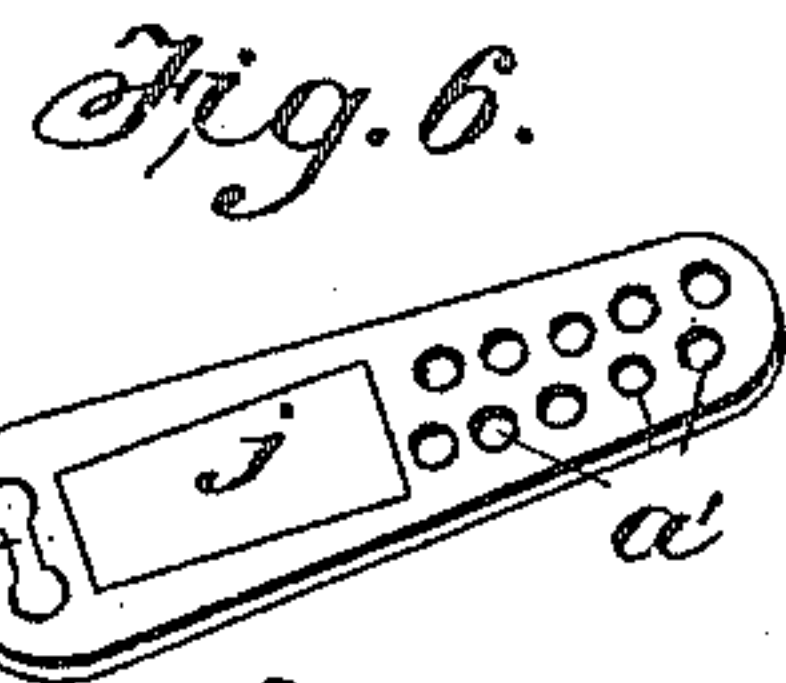
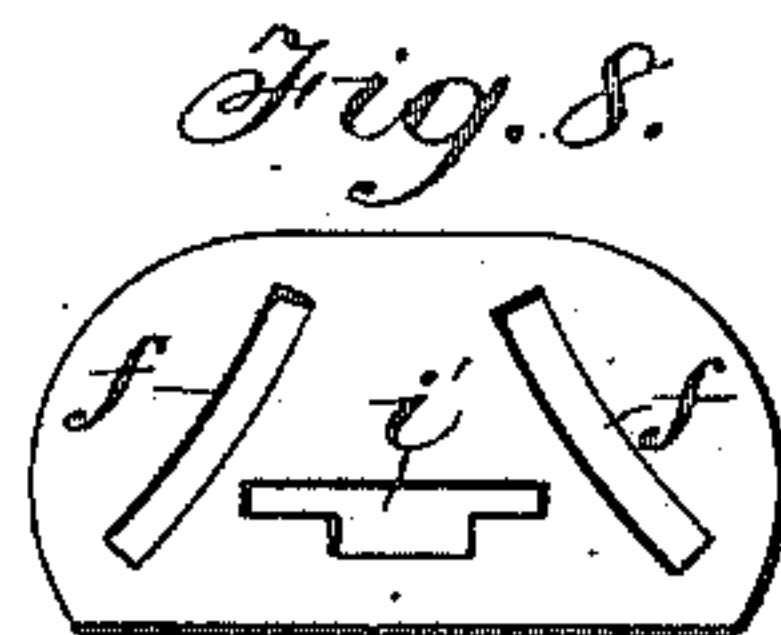
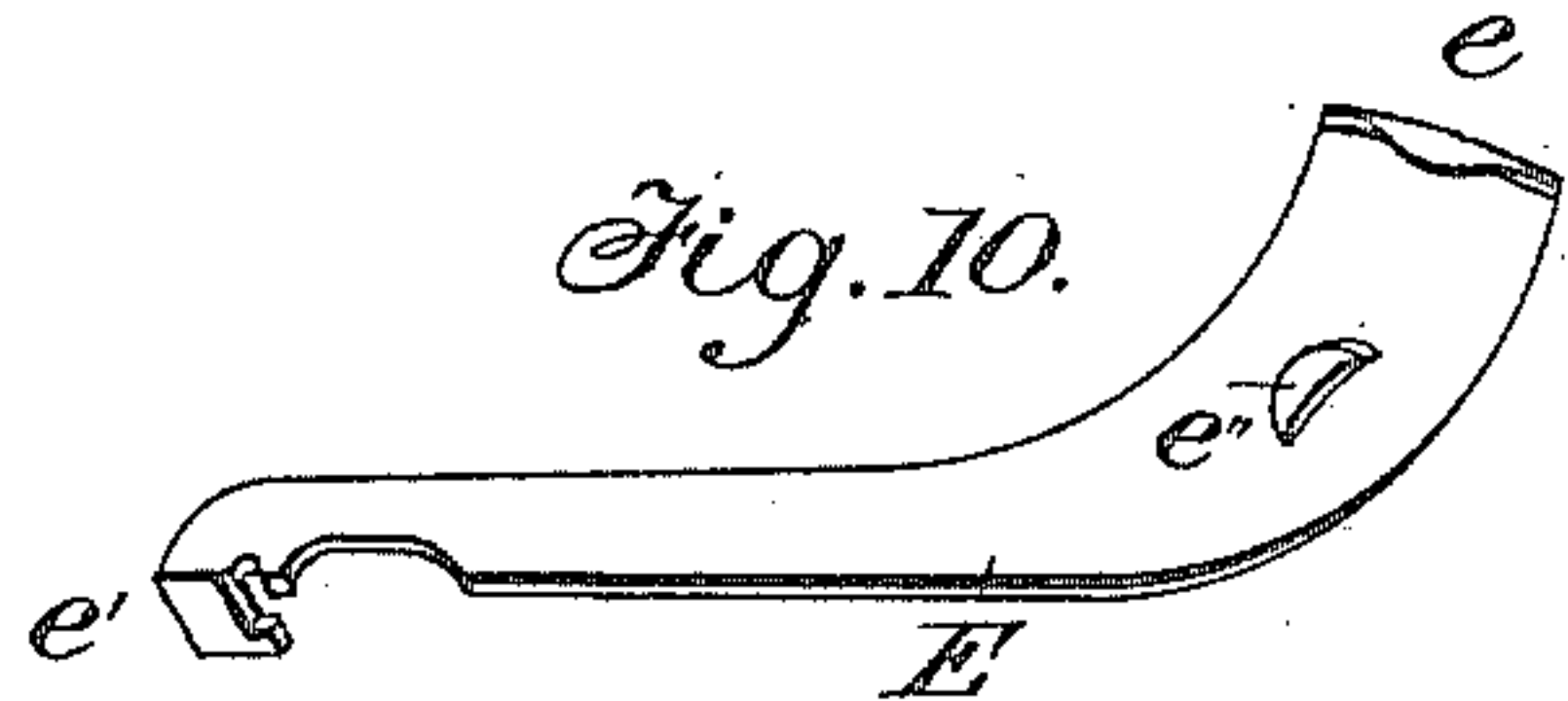
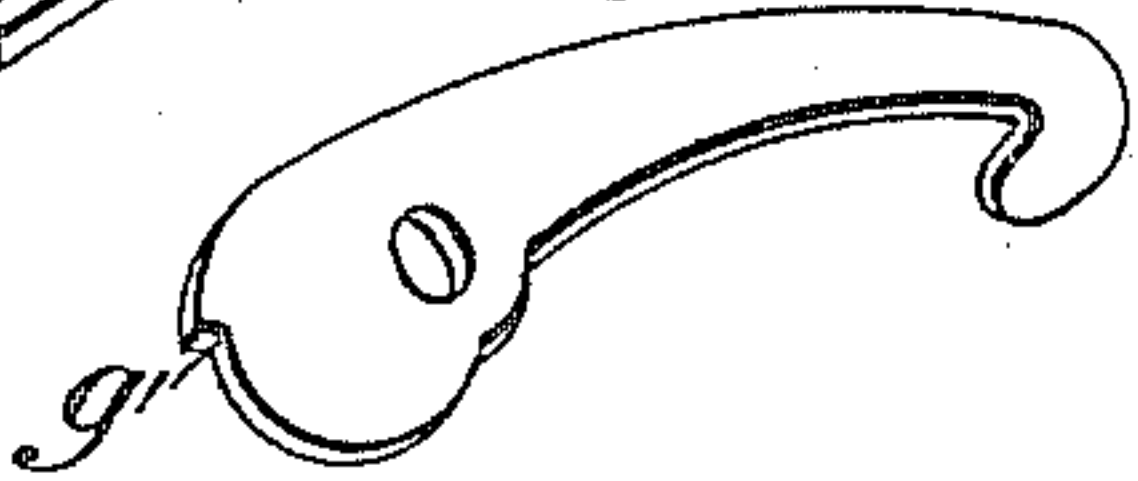
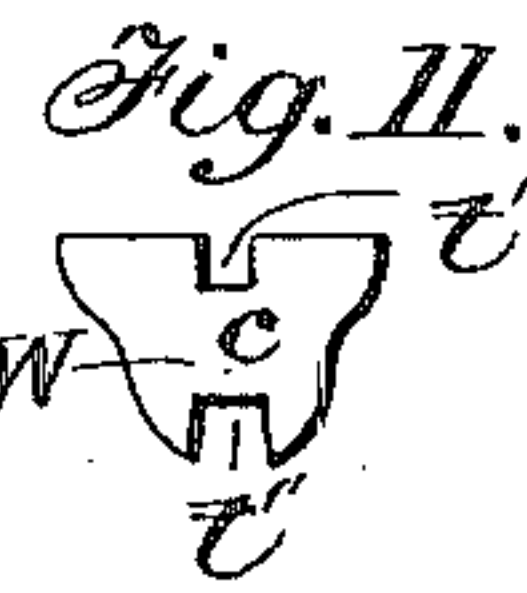


Fig. 9.



Witnesses

Ed. T. Howe.  
N. S. Black

Inventor.

S. S. Black



# UNITED STATES PATENT OFFICE.

STEPHEN S. BLACK, OF PASADENA, CALIFORNIA, ASSIGNOR OF ONE-HALF  
TO EDWARD A. COCHRAN, OF SAME PLACE.

## SKATE.

SPECIFICATION forming part of Letters Patent No. 446,421, dated February 17, 1891.

Application filed July 24, 1890. Serial No. 359,846. (No model.)

*To all whom it may concern:*

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

The object of my invention is, first, to provide a cheaply-constructed skate that will be readily secured to the boot or shoe of the skater without the use of leather straps; second, a skate that can be readily adjusted to different-sized boots without the aid of screws or wrenches; third, a skate that will admit of being readily separated into its component parts for purposes of cleaning or repair.

Figure 1 is a top view or plan. Fig. 2 is a side elevation. Fig. 3 is a vertical longitudinal section. Fig. 4 is a front end view. Fig. 5 is a perspective view of key. Fig. 6 is a perspective of the adjusting connecting-rod. Fig. 7 is a perspective view of the eccentric-lever. Fig. 8 is a top view or plan of the guide-plate. Fig. 9 is a side view of the turned pin. Fig. 10 is a perspective of the pistol-shaped sole-clamp. Fig. 11 is a front view of the webbed bracket.

Similar letters of reference indicate corresponding parts.

In the drawings, A is the runner, which is provided with two up-and-down cross-slots, both in the upper or thin edge, one near the heel end, the other near the toe end, of the runner, each slot having a recess on one side, leaving a projection *a*, Fig. 3, of the top edge of the iron which engages in the notch *i'*, Fig. 11, the web *w* of the turned-down portion *c* being engaged in the said recess of slot, as shown at *a*, Fig. 3, the slot itself being filled by the flat key I, the form of which is shown in Fig. 5. This key is provided with a notch *i* in the lower end to engage the iron at the bottom of slot *x*. The heel part of the runner is furnished with a forwardly-projecting portion to engage in the turned-down plate, as shown at *d''*, Figs. 2 and 3. The iron has also a front projecting part or tenon formed by making a notch in the edge of the toe end, as shown at *c'*, Fig. 3, for the purpose of engaging in a slot or hole in the turned-down portion *c'*, Fig. 1, of the sole-plate C, said sole-plate hav-

ing a portion cut or punched and turned downward to form the bracket or support *c*, the same being provided with notches at its upper and lower margins, as already described, and illustrated in Fig. 11. The sole-plate C is also provided with a rectangular opening immediately in front of the bracket *c*, of a size and shape corresponding to the cross-sections of the key I, which passes through it until the top of key is flush with top of sole-plate.

The heel-rest D is provided with a turned-down bracket *c*, of the same form as that in the sole-plate, and is secured with a key I in the same way as the sole-plate C. It also has a punched and turned-down portion *d'*, Figs. 2 and 3, provided with a hole to receive forward projecting portion of heel part of runner, as before mentioned, and shown in Figs. 1, 2, and 3.

The front end of the heel-rest D, or that portion which extends forward of the turned-down piece *d'''*, Fig. 2, is provided with a longitudinal slot extending forward for a sufficient distance for the reception and travel of the heels *e'* and *e'* of the sole-clamps E and E, Fig. 10, and the constricted portion *y* of the body of the center pin, Fig. 9.

*d'* is the heel-stop, which is formed by punching and turning upward from the heel-plate D.

E and E are the pistol-shaped sole-clamps, which have their front or broad ends turned up and lipped to grasp the edge of the sole. Their other or rear ends are provided with heels *e'*, which, when the sole-clamps are cut, project inward; but are afterward turned downward, so as to pass through the slot in the heel-plate, as before mentioned. These heels *e'* *e'* are provided with a notch in the front edge of each for the reception of the edge of the eccentric-lever G, as shown in Figs. 2 and 3, the object of said notch being to prevent the said heels slipping up when strained. The sole-clamps E and E are also provided with small turned-down nibs *e'''* and *e'''*, Figs. 2, 4, and 10, at suitable places to engage in the curved and converging slots *f* and *f* of the guide-plate F. This guide-plate, Fig. 8, is also provided with a cross-slot *i'*, as shown in Fig. 8, to correspond with the cross-



section of bracket *c* at or near where it joins the plate *C* and the key *I*.

*G* is the fastening eccentric-lever. It is provided with a hole for the reception of the center-pin *H* and a projection or stop *g'*, Fig. 7, to prevent it closing too far.

*J* is the flat adjusting connecting-rod, a perspective view of which is shown in Fig. 6. The long opening *j* permits it to move forward and backward along the turned-down piece *d'''* of heel-rest *D*. The oblong hole *j'* in the butt or rear end of the connecting-rod connects it with the sliding heel-clamp *B*, which has a small nib which turns downward passing through hole *j'*. This nib is notched on its lower edge to receive the top edge of runner on which it slides. The small holes *a' a' a'*, &c., Fig. 6, receive the stud *h* on the lower end of center pin *H*.

*B* is the sliding heel clamp-plate, which has two lugs *b b* turned up at right angles to the plate and are lipped at their upper extremities. This clamp-plate has a fenestra, (shown by dotted line in Fig. 1,) which embraces the bracket.

*H* is the center pin on which the fastening-lever turns, and is provided with a broad head, a groove *y* encircling its body, and a stud or teat *h* projecting from its lower end, having a constricted neck, as shown in Fig. 9, the object of the constriction being to prevent the slipping down of connecting-rod when the plate is locked on the boot.

The method of uniting the above-described parts is as follows: The connecting-rod *J* is first attached to the sliding heel-clamp *B*, as before described. The heel-rest is then placed over them, the turned-down bracket *C* passing through the fenestra in *B*, and the small turned-down piece *d'''* passing through the long slot *j* in connecting-rod. The bracket is then slipped down in slot *x* in the runner, and when bottomed moved backward, the web *w*, Fig. 11, engaging in the recess of slot, as shown in section, Fig. 3, and the turned-down piece *d'''* engaging by its opening the projecting portion of the runner, as shown in the same figure. The key *I* is then driven home, which secures the heel-gear with perfect rigidity. The bracket *c* is made of such a length from the bottom of web to the under surface of heel-rest *D* that there is room for the sliding heel-clamp *B* to move forward and backward freely.

To secure the remaining parts of the skate, first pass the center pin through hole in the setting-lever *G*, then through the opening made by turning down *d'''* from the heel-rest *D* and slip it forward in the slot provided for it in *D*, which embraces the groove *y*. Next pass the heels *e'* and *e'* of sole-clamps through the same opening in *D* and draw the front ends toward the center line of the skate, entering the inner edges of *E* between the head of center pin and setting-lever. The guide-plate *F* is then slipped under the clamps, the nibs *e'''* and *e'''* entering the converging slots

*f* and *f*. The sole-plate *C* is then attached and secured by the key *I* in the same manner as the heel-rest. The flat connecting-rod *J* is then sprung down sufficiently to allow it to be slipped under the end of stud *h* on center pin, when it will lock itself by springing up and embracing the stud by one of its holes *a' a' a'*.

It will be seen that when the eccentric-lever is turned out at right angles to the long axis of the skate, the short limb of the eccentric being rearward, the sliding heel-clamp can be drawn backward or the sole-clamps forward. When the sole-clamps are moved forward, they necessarily spread at *e* and *e*, as the slots in the guide-plate *F* diverge in that direction. When the skate is adjusted and secured to a boot or shoe by closing the lever *G* inward, the strains on the heel and sole are equalized, there being but one adjusting arrangement for both—the connecting-rod *J*. It will be further noticed that the strains are tensile strains, and the parts can consequently be made lighter than where thrust strains are used.

I am aware of the existence of the United States Patents Nos. 66,316, 69,649, and 239,996, and therefore claim nothing as my invention which is described in the specifications of those patents.

I make no claim to the punching and turning down of portions of the plate-works of skates for the purpose of fastening the same to the runner; but I would point out that in patent No. 69,649 these turned-down portions are slit up or divided to their bases, so as to embrace the runner. This is a source of weakness and rapid wear, to obviate which I have introduced the web *w*, as shown in Fig. 11, which not only strengthens the part, but forms a most excellent means of securing the upper works to the runner, by the aid of the projection *a*, Fig. 3, on the upper edge of runner and the key *I*.

I do not claim the sliding heel-clamp nor the pistol-shaped sole-clamp as a whole.

What I claim in the described skate as my invention is—

1. The eccentric-lever *G*, provided with projection *g'*, adapted to work on center pin *H* against the heels *e'* and *e'* of sole-clamps *E* and *E*, substantially as described.

2. The detachable guide-plate *F*, provided with forwardly-converging curved slots *f* and *f*, substantially as indicated.

3. The keys *I I*, each provided with a notch in its lower extremity, as and for the purpose described.

4. The combination, with the pistol-shaped sole-clamps, of the notched turned-down pieces or heels *e' e'*, the said turned-down pieces *e' e'* engaging with the eccentric-lever *G*, as and for the purpose indicated.

5. The combination of a center pin *H* with the stud *h*, the same engaging with a plate-connecting rod *J*.

6. A connecting rod or plate *J*, provided



with holes  $a' a' a'$ , adapted to stud  $h$ , for adjusting heel and sole clamps, and attached to a moving heel-clamp B, substantially as indicated.

5 7. The combination of a skate-runner with the recess-slots  $x x$ , adapted to receive the webs  $w w$  and keys I I, in combination with the sole-clamps E E, with turned-down heels  $e' e'$ , adapted to receive lever G and adjust-  
10 ably secured by center pin H, in combination with stud  $h$ , the same being adapted to holes  $a' a' a'$  in connecting-plate J, substantially as described and illustrated.

15 8. The sliding fenestrated heel-clamp B, provided with a notched turned-down nib  $b'$

and adapted to move between the heel-plate D and runner A, as and for the purpose indicated.

9. The combination of the sliding heel-clamp B, moving under heel-plate D, with 20 the adjusting perforated connecting-plate J, said adjusting-plate J being adaptable to stud H, thereby adjustably connecting the sole and heel clamps, the same being in combination with the eccentric-lever G, as and for 25 the purpose specified.

STEPHEN S. BLACK.

Witnesses:

A. M. ELLIS,  
KATE S. BLACK.