May 31, 1938. S. SEGAL 2,118,823

SKATE

Filed Nov. 20, 1934 2 Sheets-Sheet 1

Fig. 1.

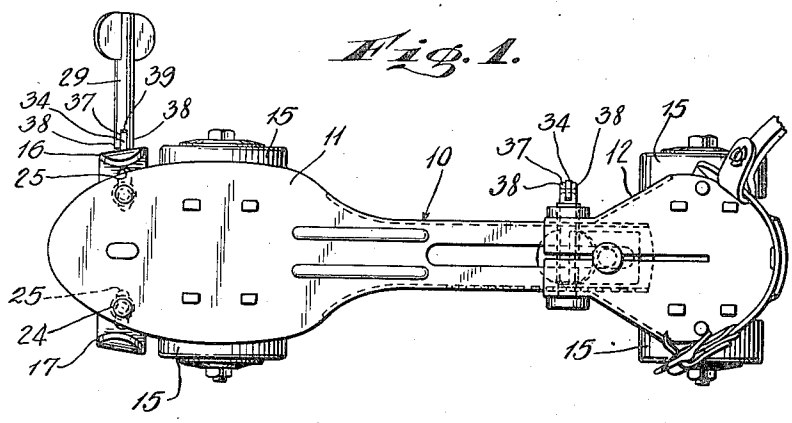

Fig. 2.

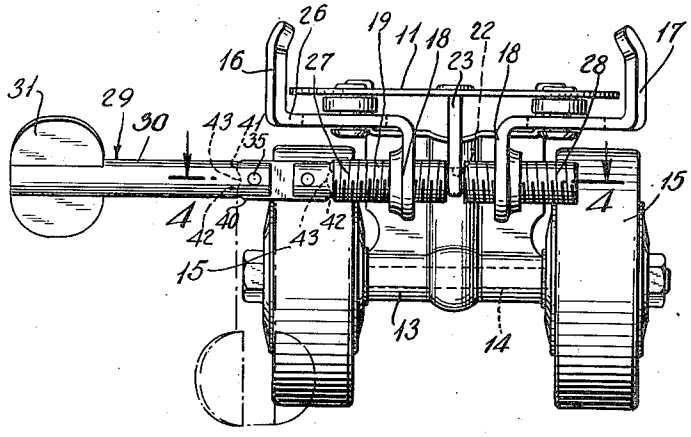

Fig. 4.

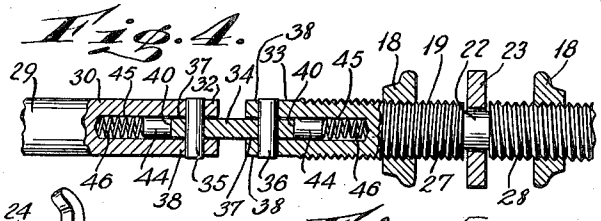

Fig. 3.

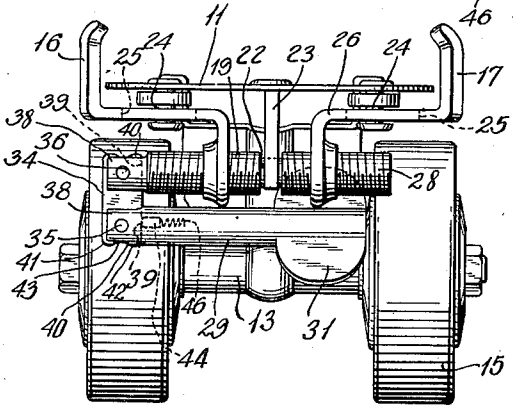

Fig. 5.

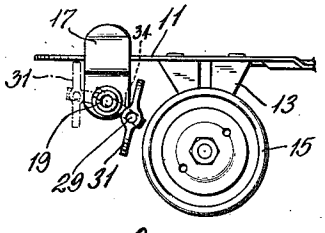

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Fig. 6

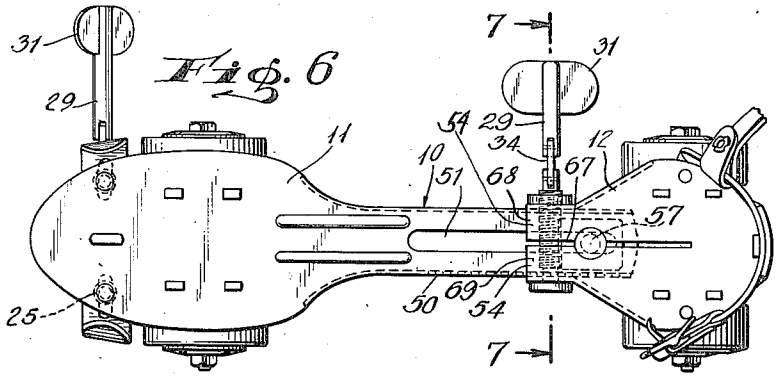


Fig. 7

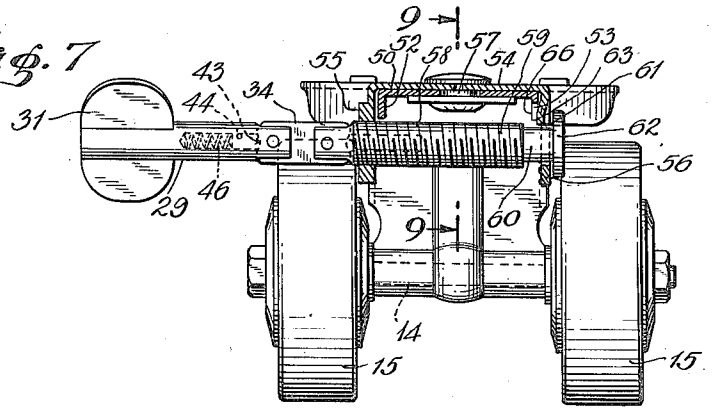


Fig. 8

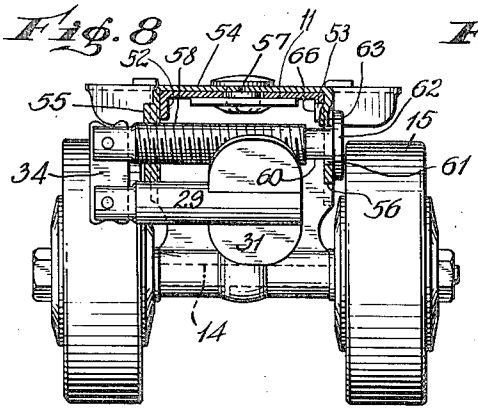
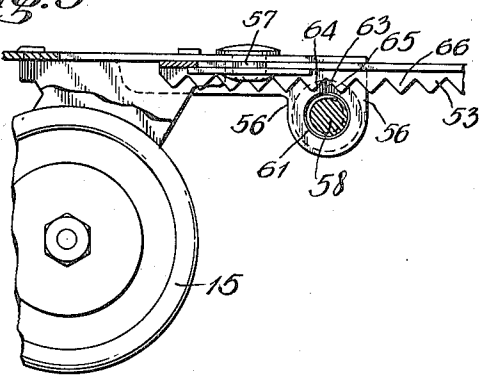


Fig. 9



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Patented May 31, 1938 2,118,823

UNITED STATES PATENT OFFICE

2,118,823

SKATE

Samuel Segal, Brooklyn, N. Y.

Application November 20, 1934, Serial No. 753,944

24 Claims. (Cl. 280—11.32)

The present invention has to do with improvements in a skate and more particularly to a foldable key continuously carried thereby.

It is an object of the invention to provide a skate having complementary clamping elements controlled by a rotatable member carrying foldable key means normally out of axial alinement with the latter and adapted to be conveniently and readily extended in axial alinement therewith for adjustably actuating the clamping members simultaneously.

It is another object of the invention to provide a skate having companion slidable sections clamped together by a rotatable adjustably controlled member continuously carrying a foldable or collapsible key which may be quickly and operatively extended to control the clamping relation of the companion sections.

Other objects, advantages, and features of the invention are in part obvious and in part pointed out hereinafter.

For a clearer understanding of the invention attention is directed to the preferred embodiment shown in the accompanying drawings in which:

Fig. 1 is a plan view of the skate according to the invention, illustrating the front key for the complementary clamping elements extended, and the rear key for adjustably holding the slidable front and rear sections, folded.

Fig. 2 is a front view of Fig. 1, illustrating in dash and dot lines the front key for the complementary clamping elements partially collapsed.

Fig. 3 is a view similar to Fig. 2 showing the front key fully collapsed.

Fig. 4 is a section taken on the line 4—4 of Fig. 2.

Fig. 5 is a fragmentary side view of a front or toe portion of the skate showing two selective settable positions of the key after having been folded.

Fig. 6 is a view similar to Fig. 1 showing both of the foldable keys extended.

Fig. 7 is a section on the line 7—7 of Fig. 6 illustrating the complementary slidable plate sections unclamped.

Fig. 8 is a view similar to Fig. 7 showing the complementary sections clamped and the control key therefor folded and out of the way.

Fig. 9 is a section on the line 9—9 of Fig. 7 showing particularly the supplemental or dead lock means to prevent slippage of the slidable sections.

The skate according to the invention is generally designated 10 and comprises telescoping and slidable plates or sections 11 and 12 each carrying a depending support as 13 each including a fixed transverse shaft 14 on which wheels 15 are rotatably supported in a manner well understood.

Associated with the front or toe section 11 is a pair of complementary clamping elements or jaws 16 and 17 having inwardly disposed depending appropriately perforated ears 18 threadably and adjustably connected to a common rotatable member or threaded shank 19 comprising an intermediate attenuated portion 22 rotatably sustained in a perforated centrally arranged lug 23 depending from the front toe section 11.

Spaced guide pins 24 carried by section 11 cooperate with slots 25 in an intermediate horizontal respective portion 26 of the clamping jaws to permit the latter to be rectilinearly moved to and from the sides of the section 11 when shank or threaded bolt 19 is rotated relative to the rectilinearly displaceable depending ears 18 of the pair of clamping jaws 16 and 17.

As shown, bolt 20 is externally threaded and includes a group of threads 27 extending in a direction to the left and a group of threads 28 extending in a direction to the right, the right and left threads of the bolt cooperate with companion threads in the spaced depending ears 18 to move the clamping jaws bodily towards each other when the bolt is rotated in one direction and to move the complementary jaws bodily away from each other when the bolt is rotated in an opposite direction.

Appropriately attached to adjustable bolt 19 is a collapsible or foldable key broadly denoted 29 which comprises a cylindrical shank 30 having alined wings or manipulative portions 31 adapted to be grasped by the operator for rotating shank or rod 30.

According to the invention, means is provided for bodily rotating or adjusting bolt 19 in the event key 29 is rotated. To this end, the adjacent terminals 32 and 33 of the key and bolt are interconnected by a common link 34 having its opposite terminals pivotally sustained on fixed pins 35, and 36 fixedly anchored across the key and bolt respectively. More specifically adjacent terminals 32 and 33 each include a slot 37 defining spaced ears or lugs 38 straddling a companion end of swingable link 34 and forming a bifurcation in association with a shoulder 39 constituted by the innermost wall of a respective slot 37.

Each of the faces 40 of link 34 is irregularly shaped to provide spaced but curved cam faces

41 and 42 which are interconnected by a central inwardly disposed concavity or arcuate face 43 defining a locking pocket or recess for an associated spring actuated cylindrical tumbler 44 yieldingly and slidably sustained in axially arranged bores 45 in the adjacent terminals 32 and 33 of the key and bolt.

Disposed within each bore 45 of the key and bolt is a helicoidal spring 46 normally urging an associated tumbler against a companion end as 40 of swingable link 34 pivotally connected to adjacent terminals of the key and bolt.

As illustrated in Fig. 2, key 29 is in axial alinement with threaded bolt 19. The key is held in alinement by reason of the locking cylindrical tumblers urged by companion springs 46 within or interlocking with a respective concavity or recess 43 at an associated end of the swingable link 34.

In the locked and alined position of the key and bolt, the latter may be bodily rotated in unison with the key, if the key be rotated. Consequently, the internally threaded spaced ears may be adjustably positioned relative to the bolt and hence complementary clamping elements 16 and 17 may be adjustably set to clamp the toe portion of a sole of a shoe interposed between the clamping elements.

Having completed adjustment of the clamping elements in respect to bolt 19, the key may be quickly folded or collapsed to be disposed underneath toe section 11. In this connection, key 29 is swung inwardly, namely, it is pivoted on fulcrum pin 35 and moved downwardly relative to the link and bolt which are held in alinement (see dot and dash lines Fig. 2). Following this operation, the key and link form a crank or elbow which may be bodily moved inwardly relative to the plate section 11 and swung on fixed fulcrum pivot pin 36. Accordingly key 29 takes the position shown in Fig. 3, namely, substantially parallel to the bolt 19. As shown in full lines in Fig. 5, the key 29 and its wing portion 31 are disposed at the rear of the complementary clamping elements 16 and 17 while the dash and dot lines show the key folded so as to be selectively sustained in front of the complementary clamping elements.

In Figs. 3 and 5, the key is folded and out of the way. If it be desired to disconnect the complementary elements 16 and 17 from a shoe, the key is extended to be in alinement with the threaded bolt 19. For this purpose shank 33 may be pivotally swung downwardly pivoting on pin 35 relative to link 34 to be in line therewith. Subsequently both the key and link are bodily swung on pivot pin 36 to dispose both the key and link in axial alinement with the bolt. The key 29 now extends laterally of the toe section 11 and may be rotated to adjust the bolt and hence elements 16 and 17, the link transmitting the rotary motion of the key to the bolt as is well understood.

In the alined position of the bolt and key, a slidable locking tumbler 40 is in part disposed in a respective cooperating recess by a companion spring 46, thus preventing displacement of the key relative to the link and/or bolt or the link in respect to the key and/or bolt. In other words the spring actuated tumblers hold the link in alinement with the bolt and key when the latter is extended laterally preparatory to adjusting the bolt.

When the key is swung relative to the link, a cam face as 41 acts on the companion tumbler displacing the latter against its spring 46 and consequently permitting the key to assume a position perpendicular to the link in which position it is held by its companion tumbler which is automatically urged against a side of the link by its associated spring. It follows therefore that tumbler 45 and spring 46 of the key holds one end of the link against shoulder 39 of the key.

With the key now at right angles to the link to form a crank therewith and it is desired to dispose the key parallel to bolt, the crank is swung bodily on pivot 36. During this movement, first the tumbler carried by the bolt is depressed by a cam face 42 to disconnect the tumbler from an associated end of the link thus permitting the latter to swing relative to the bolt and subsequently the link takes a position perpendicular to the bolt with the key parallel to the latter. In such a relation, the outward thrust of spring 46 of the bolt urges its associated tumbler against a side of the link to hold the latter in its set position against shoulder 39 of the bolt. That is to say, if the bolt be extended, it is set and locked and will stay in such position until manually disturbed and if the bolt be in collapsed position, it will automatically be retained or held folded.

The key is also held in a selected foldable position after the complementary clamping elements 16 and 17 are clamped to a sole portion of a shoe as a result of an outwardly directed thrust imparted to the bolt by the clamping elements when the latter are gripping the sides of a shoe.

As previously stated, toe plate section 11 is slidable relative to heel or rear companion plate section 12. More particularly, section 11 comprises an attenuated rear portion having a longitudinally disposed elongated slot 51 and depending side flanges 52 and 53. The rear portion of heel section 12 comprises a split yoke or channel 54 having depending ears 55 and 56 straddling depending flanges 52 and 53 of section 11.

Section 12 is slidably guided relative to section 11 by a suitable pin 57 carried by section 12 and rectilinearly guided in slot 51. The depending ears 55 and 56 of yoke 54 rotatably support the transversely disposed adjustable bolt 58 having suitable threads 59, which coact with the threads of the perforated ear 55.

One end of bolt 58 includes a reduced portion 60 loosely rotatably supported in a perforation 61 in ear 56. The reduced portion 60 is provided with a head 62 of a diameter larger than opening or perforation 61.

In Fig. 7, depending ears 55 and 56 are slightly spaced from depending flanges 52 and 53. Consequently section 11 may be slidably moved either towards or away from section 12. In this relation head 62 of the bolt is slightly spaced from its cooperating ear 56 of yoke 54. If it is now assumed that the rear foldable key 29 in Fig. 7 is identical in construction and operation to the front key more particularly disclosed in connection with Figs. 1–5 inclusive and is extended and it is desired to clamp the complementary slidable metal section or members 11 and 12 together to prevent displacement of the latter, the rear key is rotated and hence bolt 58 is rotated, causing head 62 to abut ear 56. Further rotation of the rear key in the same direction causes the depending resilient ears 55 and 56 of channel 54 to move towards each other and thus closely and frictionally embrace depending flanges 52 and 53 of the front section 11 (see Fig. 8). In other words,

the channel 54 of the rear section may be appropriately and adjustably clamped against the rear portion of front section 11. With the complementary sections clamped together as shown in Fig. 8 the rear key 29 may be folded inwardly and out of the way, namely, swung as to be disposed at one side of its bolt and substantially parallel thereto.

To provide a dead lock means to prevent longitudinal slippage of one section relative to the other after having been clamped together as previously explained, ear 56 of yoke 54 includes an inwardly disposed detent 63 cooperating with adjacent sides as 64 and 65 of notches formed by the spaced teeth 66 of flange 53 of section 11. When the ears of the yoke are brought towards each other to clamp the sections together, detent 63 falls into a notch between a pair of teeth of flanges 53 forming a supplemental or dead lock to prevent longitudinal displacement of the companion plate sections relative to each other.

The heel portion 12 is provided with a longitudinal striation 67 bisecting the channel into spaced resilient components 68 and 69 which are brought towards each other when the rear key is rotated to clamp the sections together and which are moved away from each other when the sections are unclamped.

While reference in the specification and claims is made to the term skate, and the drawings merely illustrate a roller skate, it is recognized that the invention need not be limited to a roller skate and obviously the foldable key feature as disclosed may be employed in connection with any type of skate other than the form herein set forth, for example, if desired the foldable key of the present invention may be applied to ice skates or the like and consequently strict interpretation of the term, skate, as herein utilized is therefore not contemplated.

In the broader aspect of the invention, I do not desire to be understood as limiting its embodiment to details herein shown illustratively as a wide variety of modifications may be made within the scope of the appended claims without departing from the spirit of the invention.

I claim:

1. In a skate, the combination of, complementary clamping jaws adjustably mounted on said member, a rotatable member, a key, and movable means interconnecting said member and key for holding said member and key in alinement preparatory to actuating said member for moving said jaws relative to said member or for holding said key substantially parallel to said member.

2. In a skate, the combination of, a rotatable member, complementary clamping jaws adjustably mounted on said member, a swingable key, and a connection between said member and key to hold said key in axial alinement with said member preparatory to actuating said member for moving said jaws relative to said member or for holding said key substantially parallel thereto.

3. In a skate, the combination of, a rotatable member, complementary clamping jaws adjustably mounted on said member, a swingable key for rotating said member to move said jaws relative to the latter, link means pivotally connected to said member and key, and locking means to hold said key and member in axial alinement or said key substantially parallel thereto.

4. In combination, a rotatable member, complementary clamping jaws adjustably carried by said member, a swingable key, link means pivotally associated with said key and member, and locking means to hold said key and link means in horizontal alinement with said member to permit rotation of the latter upon rotation of said key for moving said jaws relative to said member.

5. In combination, a rotatable member, complementary clamping jaws adjustably mounted on said member, a swingable key spaced therefrom, link means common to and pivoted to said member and key, and locking means carried by said key and member to hold said link means in alinement therewith preparatory to actuating said key for rotating said member and displace said jaws relative to the latter or to hold said link means substantially perpendicular thereto.

6. In combination, a rotatable member, spaced clamping jaws adjustably mounted on said member, a swingable key spaced therefrom, link means pivoted to said member and key, and locking means cooperating with said link means to hold said member and key in axial alinement preparatory to actuating the latter for rotating said member to displace said jaws relative to the latter or to hold said key at one side of said member.

7. In combination, an adjustable member, spaced jaws adjustably mounted on said member, a key spaced therefrom, link means having ends pivotally connected to said member and key, and spring actuated tumblers carried by said key and member and cooperating with said ends to hold said member and key in axial alinement to permit rotation of said member upon rotation of said key to shift said jaws relative to said member or hold said key out of said alinement at one side of said member.

8. A skate, having an adjustable member, complementary clamping elements adjustably mounted on said member, a key spaced from said member and independent thereof, link means having ends pivotally connected to said key and member, said ends comprising cam portions and a recess, and spring actuated means carried by said key and member, said link means and key being movable relative to said member and adapted to be swung into axial alinement therewith, said spring actuated means being receivable in said recesses for interlocking with said link means to hold said key and member in axial alinement preparatory to actuating said key to rotate said member to displace said clamping elements.

9. The skate according to claim 8 in which said key may be swung relative to said link means and said link means together with said key may be swung relative to said member to dispose the latter at one side of said member and below the clamping portions of said elements.

10. The skate according to claim 8 characterized in that said link means and key may be swung relative to said member and said key relative to said link means to dispose said key adjacent said member and below the clamping portions of said elements.

11. The skate according to claim 8 characterized further in that in axial alinement of said key and member, the latter is bodily rotated upon rotation of said key to adjustably set said clamping elements.

12. In combination, a bolt, spaced jaws adjustably mounted on said bolt, a key for rotating said bolt, and a connection between said bolt to displace said jaws relative to said bolt and key, said connection permitting said key to be swung relative to said bolt to dispose the longitudinal axis of said key in alinement with the longi-

tudinal axis of said bolt, said connection permitting said key to be swung relative to said bolt to dispose the longitudinal axis of said key in spaced relation with the longitudinal axis of said bolt.

13. In a skate, a bolt, spaced jaws adjustably mounted on said bolt and a foldable key carried by said bolt adapted to be swung laterally thereof and in alinement therewith for rotating said bolt to displace said jaws, and a connection between said bolt and key to permit the latter to be folded inwardly as to be disposed at one side of said bolt and spaced therefrom.

14. In a skate, complementary slidable sections, a rotatable bolt carried by one of said sections, and rotatable key means swingably carried by said bolt for clamping said sections together.

15. In a skate, complementary slidable sections, bolt means adjustably carried by one of said sections for clamping said sections together, a key, link means pivotally connected to said bolt and key, and locking means carried by said key and bolt and cooperating with said link means to hold said key and bolt in axial alinement to permit rotation of said bolt upon rotation of said key.

16. The skate according to claim 15 in which said key is displaceable relative to said link means and the latter is displaceable relative to said bolt to arrange said key below said sections and at one side of said bolt.

17. In a skate, slidable complementary sections, a rotatable bolt for adjustably clamping said sections together, a key, and a connection between said bolt and key to permit the latter to be swung from underneath said sections and be disposed in alinement with said bolt to laterally extend beyond said sections preparatory to rotating said bolt, said key being displaceable downwardly relative to said bolt subsequent to the alinement thereof and be disposed below said sections adjacent said bolt.

18. In a skate, a pair of complementary longitudinally slidable and telescoping channeled sections, a bolt rotatably carried by one of said sections for moving said last mentioned section upon rotation of said bolt into removable and frictional engagement with the other section of said pair, a key swingable relative to said bolt, intervening means pivoted to said bolt and key, and means for holding said bolt and intervening means in alinement with said bolt.

19. In a skate, complementary longitudinal outer and inner slidable channeled shoe supporting sections, said inner section having spaced teeth, said outer section comprising detent means, and a bolt rotatably carried by said outer section for clamping the outer section against said inner section to prevent relative longitudinal displacement of said sections, said detent means cooperating with adjacent teeth of said inner section for interlocking said sections.

20. In a skate, complementary outer and inner channeled shoe supporting sections having depending flanges for guiding relative longitudinal displacement of said sections, corresponding flanges of said sections having complementary interlocking means to prevent relative longitudinal displacement of said sections.

21. In a skate, complementary outer and inner channeled shoe supporting sections having respectively outer and inner depending flanges for guiding relative longitudinal displacement of said sections, detent means carried by one of said outer flanges, and teeth carried by a corresponding flange of said inner section for interlocking with said detent means to prevent relative longitudinal displacement of said sections.

22. In a skate, complementary outer and inner channeled shoe supporting sections having respectively outer and inner depending flanges for guiding relative longitudinal displacement of said sections, detent means carried by one of said outer flanges, teeth carried by a corresponding flange of said inner section for interlocking with said detent means to prevent relative longitudinal displacement of said sections, and rotatable means interconnecting said outer flanges to move the latter into clamping relation with said inner flanges.

23. In a skate, complementary outer and inner channeled shoe supporting sections having respectively outer and inner depending flanges for guiding relative longitudinal displacement of said sections, detent means carried by one of said outer flanges, teeth carried by a corresponding flange of said inner section for interlocking with said detent means to prevent relative longitudinal displacement of said sections rotatable means interconnecting said outer flanges to move the latter into clamping relation with said inner flanges, a key swingable relative to said rotatable means, and a link pivoted to the latter and said key.

24. In a skate, complementary outer and inner channeled shoe supporting sections having respectively outer and inner depending flanges for guiding relative longitudinal displacement of said sections, detent means carried by one of said outer flanges, teeth carried by a corresponding flange of said inner section for interlocking with said detent means to prevent relative longitudinal displacement of said sections, rotatable means carried by said outer flanges to move the latter in clamping relation with said inner flanges, a key swingable relative to said rotatable means, a link pivoted to the latter and said key, and means for holding said key out of alinement with said link and rotatable means or said link out of alinement with said rotatable means and said key.

SAMUEL SEGAL.

CERTIFICATE OF CORRECTION.

Patent No. 2,118,823. May 31, 1938.

SAMUEL SEGAL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 50, claim 1, strike out the words and comma "a rotatable member," and insert the same before the syllable "complemen-" in line 48, same claim; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of July, A.D. 1938.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.