

Oct. 18, 1966

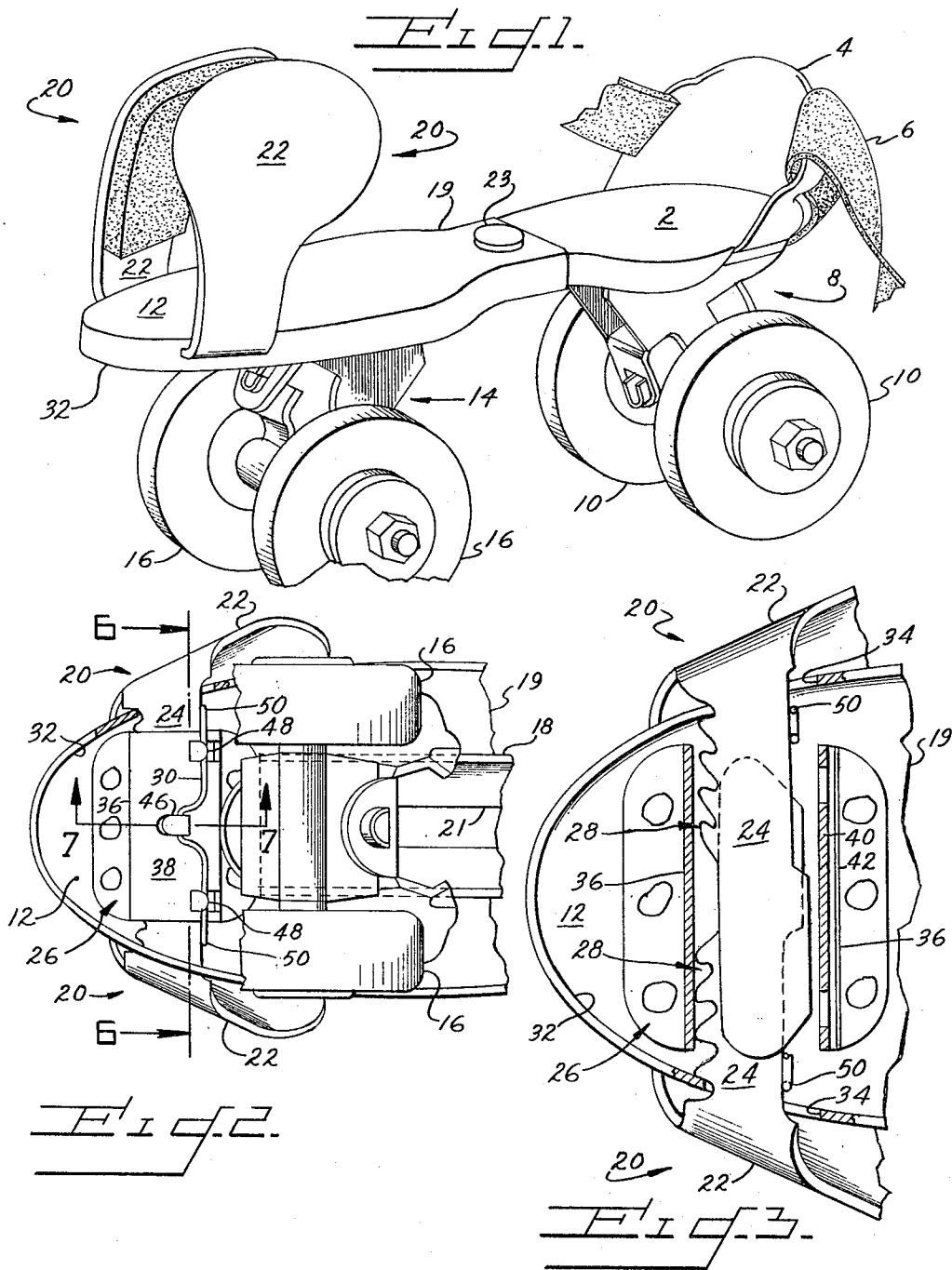
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3,279,808

ADJUSTABLE TOE FASTENER FOR ROLLER SKATES

Filed Jan. 10, 1964

2 Sheets-Sheet 1



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FIG. 4.

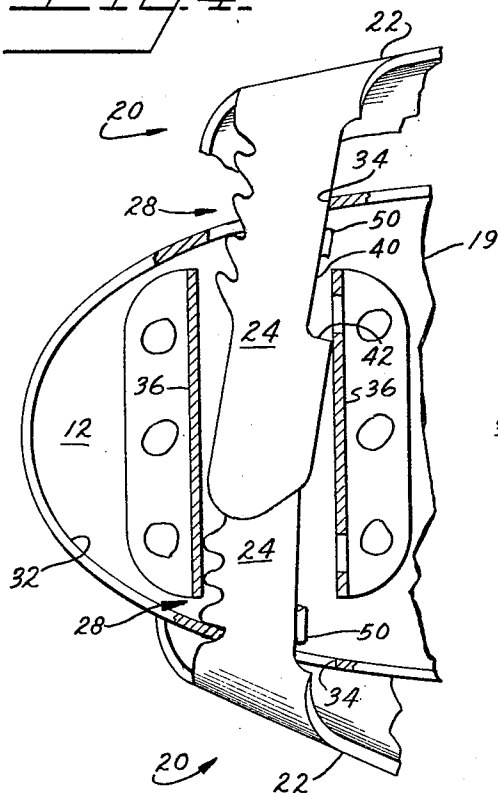
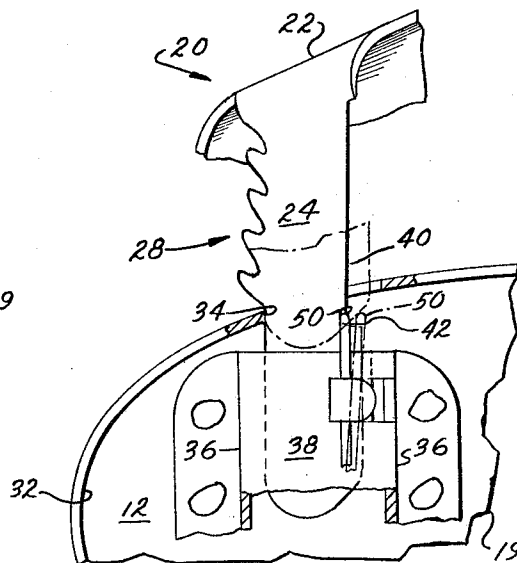


FIG. 5.

FIG. 6.

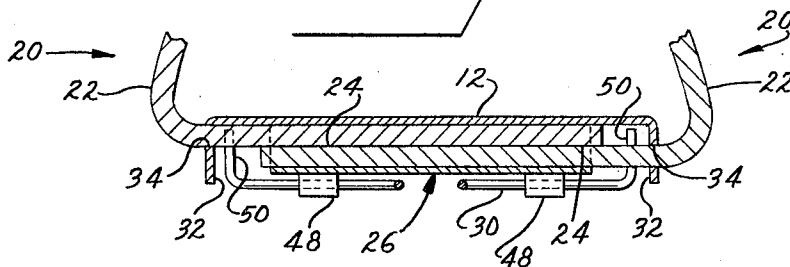
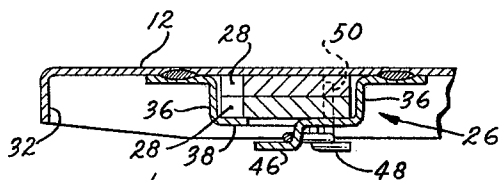


FIG. 7.

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ADJUSTABLE TOE FASTENER FOR
ROLLER SKATES

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Filed Jan. 10, 1964, Ser. No. 336,965
9 Claims. (Cl. 280—11.31)

This invention relates to roller skates and the like and more particularly to an adjustable shoe fastener assembly for the front sole plate of such skates.

An object of the invention is to provide a quickly adjustable shoe or toe plate assembly for fastening the toe of a user's shoe on the skate. The fastener assembly is adapted to fit and accommodate a wide range of shoe sizes and to be easily fastened and unfastened without the use of separate tools such as a conventional skate key.

The fastener assembly of this invention utilizes a spring action for locking the shoe holding members in a desired gripping position, the user's shoe tending normally to wedge the holding members toward a locked condition so that under ordinary circumstances only deliberate manipulation of the holders against the spring will result in releasing the fasteners for readjustment of the holding members.

A more specific object of the invention is to provide a fastener construction in which a simple inwardly directed push on the holding members at each side of the sole plate will cause the members to "automatically" shift into holding position against the shoe without elaborate adjustment. In releasing the members a simple rearwardly directed push and outward pulling action only is required.

Insofar as is known the nearest prior art is that shown by 1863 Patent No. 37,305. In this prior construction a pair of holding members are held in place by spring means but these members are released to fasten or unfasten the skate only by manually holding the spring out of contact with the shoe engaging members so that the latter can be moved as desired.

The above and other structural and functional advantages of the present invention will be apparent from the following disclosure of invention as shown by the accompanying drawings in which:

FIG. 1 is a perspective view of a roller skate embodying the invention;

FIG. 2 is a view of the underside of the sole or toe plate of FIG. 1 showing a bracket for holding the inner ends of the fastener members and the spring means associated therewith;

FIG. 3 is an enlarged fragmentary view of the assembly of FIG. 2 with portions cut away to illustrate details of construction;

FIG. 4 is a view similar to FIG. 3 to illustrate the operation of the device;

FIG. 5 is a view similar to FIGS. 2 and 3 showing a fastener at its outermost position;

FIG. 6 is a section on line 6—6 of FIG. 2; and

FIG. 7 is a section on line 7—7 of FIG. 2.

In FIG. 1 a roller skate is shown which may be generally of conventional construction having a rear or heel plate 2 with guard 4, ankle strap 6, wheel frame 8, and wheels 10. A front or sole plate is indicated at 12 supported on a wheel frame 14 with wheels 16. The heel plate 2 is part of a rear skate frame which extends forwardly in the form of a tongue 18 (FIG. 2) underlying a front skate frame 19 of which the toe plate 12 is a part. A longitudinal slot 21 is formed in tongue 18 through which a fastener bolt 23 (FIG. 1) on frame 19 passes so that the front and rear frames are telescopically joined and the length of the platform is adjustable to accommodate various shoe lengths as will be readily understood.

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The fastener assembly for embracing the front part of the wearer's shoe is preferably at the forward portion of the sole plate 12 where the flanged sides of the plate converge toward the tip end thereof as shown by FIG. 2. As seen from FIG. 1 and FIG. 2 the outer part of each fastener member, generally indicated by the numeral 20, is provided by an upwardly and inwardly angled arched shoe engaging portion 22 which is adapted to snugly embrace the toe of the shoe at each side. The inner part of the fasteners 20 support the portion 22 in any position of adjustment and as shown in the drawings this inner part is an inwardly directed flat bar or blade 24 passing through a slotted portion of the plate flange and slidably fitted in a bracket 26 fixed to the underside of the sole plate 12.

Each blade 24 is formed with a rack or series of teeth 28 projecting forwardly of the front edge of the blade along an inner end portion thereof, the teeth being adapted to engage the forward edge of the slot in the flange to retain the fastener against transverse movement. The bracket 26 together with a spring 30 mounted on the bracket and engaging the blade serves to yieldably maintain an operative holding blade position as will be described.

The sole plate 12 as shown is provided with the downwardly extending flanged skirt at 32. At opposite sides of the plate the flange portions are provided with the oppositely positioned slots 34 through which the blade supports 24 pass. Bracket 26 is transversely positioned between slots 34, being U-shaped (FIG. 7) with flanged front and rear walls 36 and a connecting wall 38. The walls 36 are flanged for attachment to the underside of the sole plate as by spot welding. Thus an open ended channel bracket to receive the ends of the blades is formed with its ends being spaced from the side flanges 32 as shown. It will be noted (FIG. 6) that the slots 34 are vertically offset so that the blades will be horizontally disposed and in overlapping relation to each other within the bracket.

As best shown by FIG. 3 the teeth 28 of each blade lie along an inner end portion only, the crown of the teeth thus being forwardly offset from the front edge of the outer end portion of the blade. Along the back edge of the blade, an inner end portion is recessed with relation to an outer end portion, the recess indicated at 40 being in substantially coextensive opposed relation to the toothed rack portion. The outer end of the recess terminates in an abutment 42 and thus the inner portion is forwardly offset relative to the outer back edge.

The spring means of the assembly is conveniently mounted on bracket 26 and is formed as a spring wire element 30 retained by eared tabs or hooks struck from the metal of the connecting wall 38 of the bracket. A central tab or ear 46 faces forwardly and end tabs 48 are faced rearwardly (FIG. 7). The wire 30 has a central loop (FIG. 2) caught under tab 46 and at each side the wire extends under a rearwardly facing tab 48 adjacent each open end of the bracket. The wire is bent upwardly at each tip end 50 to engage the back edge of the blade at its recessed portion 40 adjacent the edge of the toe plate. The tip end of the wire is thus substantially in a rearwardly aligned position relative to the forward edge of slot 34 of the flange. Each side of the wire spring is stressed forwardly and the tip engaged against the recessed back side of the blade.

Accordingly the spring urges the blades forwardly for engaging one of the teeth against the inner wall of the flange at the forward edge of a slot 34 as seen in FIG. 3. In this position it will also be noted that the blade is swung against the rear wall 36 of the bracket to "lock" the fastener in this position of adjustment. Furthermore it will be appreciated that when a wearer's shoe is embraced by the outer arched portion of the fastener the tendency

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of the wearer is to exert a forward thrust against the arched portion and thus maintain the fastener in the desired position of engagement.

From FIG. 4 it will be seen that the fastener is released by a rearwardly directed push and an outward pulling action so that the blade can be slidably moved to any of the several positions of adjustment afforded by the teeth. As shown the rearward push against the spring tip 50 carries the crown of the teeth away from the forward edge of slot 34 and the blade will pivotally move to carry its outer end forwardly against the front wall 36 of the bracket. The walls 36 thus serve as a guide and to limit pivotal motion of the blades.

In FIG. 5 the fastener is shown in its outermost position of adjustment. Here the top of the spring catches the abutment 42 of the recessed inner portion to prevent further outward movement. By manually pressing the spring clear of the abutment, the blade can be separated from the assembly if desired. The extreme outer end of the blade is angled at its rear corner edge for easy assembly of the blade by simply pushing inwardly to deflect the spring tip 50 when the blade is to be inserted. This is shown by the dotted line representation in FIG. 5.

It is also to be noted that the edge of each tooth at its inboard side is formed with a less acute angle than at the outboard side. The sharper angle of the latter is to insure a firm holding pressure against the inner forward edge portion of the slot 34 while the inclined inboard edge enables the blade to slide past the edge easily when being pushed inwardly. Thus the blade merely "clicks" past the edge by applying simple inward pressure until the outer arched portion is snug against the shoe in which position the fastener will automatically be "locked" in operative holding condition.

Having thus described the invention, what is claimed as novel and desired to be secured by Letters Patent of the United States is:

1. In combination a sole plate and adjustable shoe fastener assembly for roller skates and the like comprising a sole plate having downwardly extending flanges with portions providing slots at opposite sides of the plate, a fastener member mounted on each side of the plate having an outer upwardly and inwardly angled shoe engaging portion and an inwardly directed adjustable blade support passing through the slot of the flange and under the plate, each blade support having a front edge with an inner end portion of said edge provided with a rack of teeth projecting therefrom in forwardly offset relation to the outer end portion of the front edge, and a back edge with an inner end portion recessed in forwardly offset relation to the back edge of the outer end portion, the said recessed portion forming an abutment at the end of the inner portion, blade guide means at the underside of said sole plate inwardly spaced at each end from said flanges and including front and back wall members receiving said blade supports, said wall members limiting pivotal motion of said supports, spring means slidably engaging the recessed back edge portion of each said blade support in substantially rearwardly aligned position relative to the forward edge of each said flange slot and yieldably engaging teeth of said rack with said slotted flanged portion, said supports when swung against said spring means disengaging said teeth, and when in said latter position being movable transversely of said sole plate for adjusting said shoe engaging portions.

2. The structure of claim 1 in which said flange slots are in vertically offset relation and said blade supports overlap each other; said guide means receiving the blade supports is a bracket with front and back walls fixed to the underside of said plate and a connecting wall, said connecting wall being formed with a central forwardly facing eared hook and a rearwardly facing eared hook at each end; and said spring means is carried on said connecting wall and comprises a spring wire having a rearwardly facing loop caught under the central hook with each side thereof being forwardly stressed and passing under an end

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hook, an outer tip at the ends of said wire being turned upwardly and slidably caught against the back edges of the recessed inner portions of said blade supports, said tip ends of the wire being engageable against the abutments formed by said recessed back edge portions of the blade supports and limiting outer extension of said blades.

3. The combination according to claim 1, in which said flange slots are in vertical offset relation and said blade supports overlap each other; said guide means receiving the blade supports comprising a bracket having front and back walls fixed to the underside of said plate and a connecting wall; forwardly facing hook means centrally located on said connecting wall, rearwardly facing hook means at each end of said connecting wall; said spring means being mounted on said connecting wall with the central portion of said spring caught under the central hook means and each side thereof being forwardly stressed and passing under a rearwardly facing hook means; the outer tip of said spring means slidably engaging the back edges of the recessed inner portions of said blade supports.

4. The structure of claim 1 in which said spring means comprises a spring wire having an outer tip at each end of said wire turned upwardly to slidably engage the back edges of the recessed inner portions of said blade supports, said ends of the wire being positioned to engage the abutments formed by said recessed back edge portions of the blade supports thereby limiting outer extension of said blades.

5. The structure of claim 1 wherein the inner end of said blade support is angled back at its rear corner edge whereby on insertion of said blade supports through said flange slots, said spring means will be engaged by the inner end of the blade support and will be deflected out of the path of travel of the blade supports, thereby permitting easy assembly of the blade support into said guide means.

6. The structure of claim 1 in which the said rack of teeth is comprised of a series of teeth, and each tooth having an inboard side formed with a smaller acute angle than the outboard side, the teeth thereby firmly engaging the said flange when pulled outwardly and easily sliding past the flange when pushed inwardly.

7. In combination a sole plate and an adjustable shoe fastener assembly for roller skates and the like, comprising a sole plate, shoe engaging means mounted on said sole plate, said shoe engaging means including adjustment blades projecting inward and underlying said sole plate, each of said blades having a row of teeth along one edge, said teeth having a substantially straight outer surface and an inclined inward surface, fixed stop means secured to the underside of said sole plate in a position to engage the teeth on each of said blades, spring means biasing said blade into engagement with said stop means, said sole plate including depending flanges along each side with slots located in said flanges on opposite sides of said sole plate in a vertically off-set relation, said blades projecting inwardly through said slot with said blades overlapping each other under the sole plate, and including a blade support having front and back walls fixed to the underside of the sole plate on each side of said blades, and connected by a bottom wall forwardly facing hook means centrally located on said bottom wall, rearwardly facing hook means at each end of said connecting wall, said spring means being mounted on said hook means with the outer tip of said spring means slidably engaging the edges of said blades opposite to the series of teeth, whereby said shoe engaging means can be moved inward by merely pushing inward on the blades and can be moved outward only by moving the teeth out of engagement from the fixed stop means.

8. The combination according to claim 7 wherein the inner end of each of said blades is cut at an angle in order to deflect the ends of said spring means toward the recessed edge of the blade when the blade is inserted

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through said slot in said flange, thereby permitting easy assembly of the blades in said blade supports.

9. In combination a sole plate and adjustable shoe fastener assembly for roller skates and the like comprising a sole plate, shoe engaging means mounted on said sole plate, said shoe engaging means including adjustment blades projecting inward and underlying said sole plate, each of said blades having a row of teeth along one edge, said teeth having a substantially straight outer surface and an inclined inward surface, fixed stop means secured to the underside of said sole plate in a position to engage the teeth on each of said blades, said blades including recesses along the edge opposite to the teeth, spring means slidably engaging the blades in the recessed portion biasing said blade into engagement with said stop means whereby said shoe engaging means can be moved inward by merely pushing inward on the blades and can be moved outward only by moving the teeth

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out of engagement from the fixed stop means, and said blade is limited in travel to the length of the recess.

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