A skate includes a lower base, an upper base adjustably mounted on the lower base, and a control knob mounted on the lower base and detachably locked onto the upper base. The upper base has a slide provided with a plurality of locking teeth. The control knob is movably mounted in the lower base and has a first end provided with a support and a second end provided with a press button protruding from the lower base. The support of the control knob has a locking groove detachably locked on one of the locking teeth of the upper base.
SKATE HAVING A SIZE ADJUSTABLE FUNCTION

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a skate and, more particularly, to a skate, such as an in-line skate, a roller skate and the like.

[0003] 2. Description of the Related Art

[0004] A conventional skate in accordance with the prior art shown in FIGS. 6-10 comprises a lower base 50, an upper base 60 adjustably mounted on the lower base 50, and a control knob 70 mounted on the lower base 50 and detachably locked onto the upper base 60 to releasably lock the upper base 60 onto the lower base 50. The lower base 50 has a top provided with a slideway 52 and a receiving channel 53 connected to the slideway 52. The receiving channel 53 of the lower base 50 is perpendicular to the slideway 52 of the lower base 50. The top of the lower base 50 has a periphery provided with a protruding limit block 51. The upper base 60 has a bottom provided with a slideway 62 slidably mounted in the slideway 52 of the lower base 50. The slide 62 of the upper base 60 is provided with a plurality of positioning holes 63. The bottom of the upper base 60 has a periphery provided with a limit slot 61 mounted on the limit block 51 of the lower base 50 to attach the upper base 60 to the lower base 50. The control knob 70 is movably mounted in the receiving channel 53 of the lower base 50. The control knob 70 has a first end provided with an upright support 74 disposed in the receiving channel 53 of the lower base 50 and a second end provided with a press button 72 protruding outwardly from the receiving channel 53 of the lower base 50.FIG. 2 is an exploded perspective view of the skate as shown in FIG. 1.

[0006] In fabrication, after the control knob 70 is formed by an injection molding process, the positioning rod 71 is bonded onto the control knob 70 by a high frequency. However, the control knob 70 is not integrally formed with the positioning rod 71 so that the positioning rod 71 has a smaller strength and cannot withstand a larger shear stress. Thus, the positioning rod 71 is worn out or broken easily during a long-term utilization, thereby greatly decreasing the lifetime of the skate.

BRIEF SUMMARY OF THE INVENTION

[0007] In accordance with the present invention, there is provided a skate, comprising a lower base, an upper base adjustably mounted on the lower base, and a control knob mounted on the lower base and detachably locked onto the upper base to releasably lock the upper base onto the lower base. The lower base has a top provided with a slideway and a receiving channel connected to the slideway. The upper base has a bottom provided with a slide slidably mounted in the slideway of the lower base. The slide of the upper base has a side provided with a plurality of locking teeth spaced from each other. The control knob is movably mounted in the receiving channel of the lower base. The control knob has a first end provided with an upright support disposed in the receiving channel of the lower base and facing the locking teeth of the upper base and a second end provided with a press button protruding outwardly from the receiving channel of the lower base. The support of the control knob has a first side provided with a locking groove detachably locked on one of the locking teeth of the upper base.

[0008] The primary objective of the present invention is to provide a skate having a size adjustable function.

[0009] Another objective of the present invention is to provide a skate, wherein the respective one of the locking teeth of the upper base is supported between the two opposite sidewalls of the locking groove to increase the contact area between the respective one of the locking teeth of the upper base and the support of the control knob so as to increase the combination strength of the control knob and the slide of the upper base so that the support of the control knob is combined with the locking teeth of the upper base solidly and exactly.

[0010] A further objective of the present invention is to provide a skate, wherein the slide of the upper base is integrally formed with the locking teeth, and the support of the control knob is integrally formed with the locking groove, so that each of the locking teeth of the upper base has a greater strength to withstand a larger shear stress and is not worn out or broken easily during a long-term utilization, thereby greatly enhancing the lifetime of the skate.

[0011] Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

[0012] FIG. 1 is a perspective view of a skate in accordance with the preferred embodiment of the present invention.

[0013] FIG. 2 is an exploded perspective view of the skate as shown in FIG. 1.
FIG. 3 is a side view of the skate as shown in FIG. 1.
FIG. 4 is a partially top cross-sectional view of the skate as shown in FIG. 1.
FIG. 5 is a schematic operational view of the skate as shown in FIG. 4 in use.
FIG. 6 is a perspective view of a conventional skate in accordance with the prior art.
FIG. 7 is an exploded perspective view of the conventional skate as shown in FIG. 6.
FIG. 8 is a side view of the conventional skate as shown in FIG. 6.
FIG. 9 is a partially top cross-sectional view of the conventional skate as shown in FIG. 6.
FIG. 10 is a schematic operational view of the conventional skate as shown in FIG. 9 in use.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings and initially to FIGS. 1-4, a skate in accordance with the preferred embodiment of the present invention comprises a lower base 10, an upper base 20, and a control knob 40 mounted on the lower base 10 and detachably locked onto the upper base 20 to releasably lock the upper base 20 onto the lower base 10.

The lower base 10 has a top provided with a slide 12 and a receiving channel 13 connected to the slide 12. The receiving channel 13 of the lower base 10 is perpendicular to the slide 12 of the lower base 10. The top of the lower base 10 has a periphery provided with a protruding limit block 11.

The upper base 20 has a bottom provided with a slide 22 slidably mounted in the slide 12 of the lower base 10. The slide 22 of the upper base 20 is an elongate plate and has a side provided with a plurality of locking teeth 23 spaced from each other. The slide 22 of the upper base 20 is integrally formed with the locking teeth 23. The locking teeth 23 of the upper base 20 are movable in the slide 12 of the lower base 10. Each of the locking teeth 23 of the upper base 20 protrudes outwardly from the slide 22 of the upper base 20 and has a distal end provided with an arcuate guide portion 230. Each of the locking teeth 23 of the upper base 20 has an elongate shape and has a length equal to a width of the slide 22 of the upper base 20. Each of the locking teeth 23 of the upper base 20 is disposed at an upright state. The bottom of the upper base 20 has a periphery provided with a limit slot 21 mounted on the limit block 11 of the lower base 10 to attach the upper base 20 to the lower base 10.

The control knob 40 is movably mounted in the receiving channel 13 of the lower base 10. The control knob 40 has a first end provided with an upright support 44 disposed in the receiving channel 13 of the lower base 10 and facing the locking teeth 23 of the upper base 20 and a second end provided with a press button 42 protruding outwardly from the receiving channel 13 of the lower base 10. The support 44 of the control knob 40 has a first side provided with a locking groove 41 detachably locked on one of the locking teeth 23 of the upper base 20. The support 44 of the control knob 40 is integrally formed with the locking groove 41. The locking groove 41 of the control knob 40 is disposed at an upright state and has an elongate shape. The locking groove 41 of the control knob 40 has a substantially U-shaped cross-sectional profile and has an opening directed toward the locking teeth 23 of the upper base 20. The locking groove 41 of the control knob 40 has two opposite sidewalls 43, and one of the locking teeth 23 of the upper base 20 is supported between the two opposite sidewalls 43 of the locking groove 41.

The skate further comprises an elastic member 30 mounted in the receiving channel 13 of the lower base 10 and biased between the lower base 10 and a second side of the support 44 of the control knob 40 to push the locking groove 41 of the control knob 40 toward one of the locking teeth 23 of the upper base 20.

In operation, referring to FIGS. 4 and 5 with reference to FIGS. 1-3, the elastic member 30 pushes the locking groove 41 of the control knob 40 toward the locking teeth 23 of the upper base 20 so that the locking groove 41 of the control knob 40 is locked onto one of the locking teeth 23 of the upper base 20 as shown in FIG. 4 so as to lock the upper base 20 onto the lower base 10.

On the contrary, when the press button 42 of the control knob 40 is pressed toward the elastic member 30, the elastic member 30 is compressed, and the support 44 of the control knob 40 is moved outwardly relative to the locking teeth 23 of the upper base 20 as shown in FIG. 5 so that the locking groove 41 of the control knob 40 is moved to detach from one of the locking teeth 23 of the upper base 20 so as to unlock the upper base 20 from the lower base 10. In such a manner, the slide 22 of the upper base 20 is unlocked from the control knob 40 and is movable in the slide 12 of the lower base 10 so that the upper base 20 can be moved forward and backward relative to the lower base 10 as shown in FIG. 3 to adjust the distance between the upper base 20 and the lower base 10 so as to fit boots of different sizes.

After adjustment of the distance between the upper base 20 and the lower base 10, the force applied on the press button 42 of the control knob 40 is removed, so that the support 44 of the control knob 40 is pushed by the restoring force of the elastic member 30 to move toward the locking teeth 23 of the upper base 20, and the locking groove 41 of the control knob 40 is moved to lock another one of the locking teeth 23 of the upper base 20 so as to lock the upper base 20 onto the lower base 10 again.

At this time, if the respective one of the locking teeth 23 of the upper base 20 is not exactly inserted into the locking groove 41 of the control knob 40 and is stopped by one of the two opposite sidewalls 43 of the locking groove 41, the upper base 20 can be moved slightly relative to the lower base 10 to align the respective one of the locking teeth 23 of the upper base 20 with the locking groove 41 of the control knob 40 so that the respective one of the locking teeth 23 of the upper base 20 can be exactly inserted into the locking groove 41 of the control knob 40 by guidance of the arcuate guide portion 230 of the respective one of the locking teeth 23.

Accordingly, the respective one of the locking teeth 23 of the upper base 20 is supported between the two opposite sidewalls 43 of the locking groove 41 to increase the contact area between the respective one of the locking teeth 23 of the upper base 20 and the support 44 of the control knob 40 so as to increase the combination strength of the control knob 40 and the slide 22 of the upper base 20 so that the support 44 of the control knob 40 is combined with the locking teeth 23 of the upper base 20 solidly and exactly. In addition, the slide 22 of the upper base 20 is integrally formed with the locking teeth 23, and the support 44 of the control knob 40 is integrally formed with the locking groove 41, so that each of the locking teeth 23 of the upper base 20 has a greater strength to
5. The skate of claim 1, wherein each of the locking teeth of the upper base has a distal end provided with an arcuate guide portion.
6. The skate of claim 1, wherein each of the locking teeth of the upper base has an elongate shape.
7. The skate of claim 1, wherein each of the locking teeth of the upper base has a length equal to a width of the slide of the upper base.
8. The skate of claim 1, wherein each of the locking teeth of the upper base is disposed at an upright state.
9. The skate of claim 1, wherein the slide of the upper base is an elongate plate.
10. The skate of claim 1, wherein the locking teeth of the upper base are movable in the slideway of the lower base.
11. The skate of claim 1, further comprising: an elastic member mounted in the receiving channel of the lower base and biased between the lower base and a second side of the support of the control knob to push the locking groove of the control knob toward one of the locking teeth of the upper base.
12. The skate of claim 1, wherein the locking groove of the control knob is disposed at an upright state.
13. The skate of claim 1, wherein the locking groove of the control knob has an elongate shape.
14. The skate of claim 1, wherein the locking groove of the control knob has a substantially U-shaped cross-sectional profile.
15. The skate of claim 14, wherein the locking groove of the control knob has an opening directed toward the locking teeth of the upper base.
16. The skate of claim 14, wherein the locking groove of the control knob has two opposite sidewalls; one of the locking teeth of the upper base is supported between the two opposite sidewalls of the locking groove.
17. The skate of claim 1, wherein the receiving channel of the lower base is perpendicular to the slideway of the lower base.

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