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(54) Title: CAPO

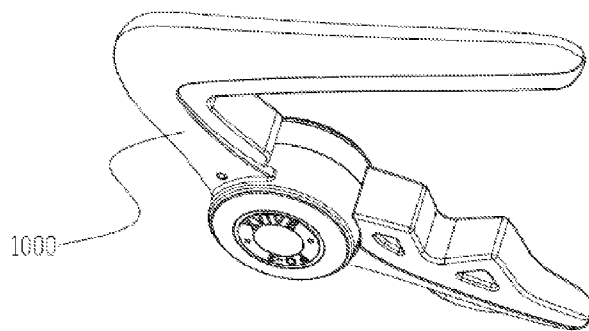


FIG. 1

(57) Abstract: A clamping mechanism for a guitar capo (1000), comprises: an upper clamp (100) and a lower clamp (200). The upper clamp (100) and the lower clamp (200) form a clamping hinge structure. The upper clamp (100) and the lower clamp (200) are pivotally connected to each other by a toothed one-way gear (350). The gear (350) is arranged in the lower clamp (200). An unlocking handle (300) is hinged in the upper clamp (100). The handle (300) has a first end (310) and a second end (330) that selectively engages teeth (352) of the gear (350). When the second end (330) of the handle (300) engages the gear teeth (352), the gear (350) is stationary and the lower clamp (200) is pivotable toward the upper clamp (100) to a closed position. When the second end (330) is disengaged from the gear teeth (352), the gear (350) is movable and the lower clamp (200) is pivotable from the upper clamp (100) to an open position.



Description

Title of Invention: CAPO

Technical Field

[0001] The present disclosure is directed to the field of guitar accessories, and in particular to a clamping mechanism for a guitar capo.

Background Art

[0002] The capo was originally used to adjust the pitch of the guitar. It is a commonly used auxiliary tool in the folk guitar playing and singing. When changing the pitch, the capo can press the frets to increase the tune by a corresponding interval while playing with the original fingering, so that the tune is in harmony with the singer's voice, which greatly reduces the difficulty of changing the pitch, and now the capo is widely used in the performance of flamenco guitar, classical guitar and folk guitar.

[0003] Traditional capos can only be adapted for a guitar with single-sized fingerboard, or on one guitar at a time. When the capo user wants to change to a different guitar, the capo needs to be re-adjusted. As a result, guitar lovers need to purchase a lot of capos to fit different guitars. Every time a guitar is changed, it takes time to find the right capo amongst the different types of capos available to a player. Different capos have different clamping forces and therefore have small application range. The clamping force of the spring-type capo is difficult to guarantee and is not adjustable, and the capos operated in screw tightening mode have complicated operation and short service life. A capo is desired that provides a clamping mechanism that accommodates string instruments, guitars, regardless of fingerboard size.

[0004] One of the objects of the embodiments of the present application is to provide a clamping mechanism for a guitar capo, the clamping mechanism is convenient for the user to use at any time and suitable for different types of guitars, which increases the ability of the human hand to freely control the clamping force and therefore solves the following problems: the traditional capo can only be adapted for a guitar with single-sized fingerboard, the capo needs to be re-adjusted when the player changes a guitar of a different type, and each time after changing the guitar, it takes a long time to find the right capo.

Summary of Invention

Technical Problem

Solution to Problem

Technical Solution

[0005] A clamping capo such as a clamping mechanism for a guitar capo is provided. The capo has a lower clamp hinged and pivotably connected to the upper clamp. The lower

clamp moves between open and closed positions relative to the upper clamp. A toothed one-way gear is disposed within the lower clamp. The gear has gear teeth on an outer gear surface and one-way roller bearings on an inner gear surface. The roller bearings rotate counterclockwise but not clockwise.

[0006] An unlocking handle selectively engages said gear teeth. The handle is hinged within the upper clamp and has a first end and a second end. The second end selectively engages the teeth of the gear. When the second end of the handle engages the gear teeth, the gear is static and the lower clamp is pivotable toward the upper clamp into the closed position. When the second end of the handle disengages the gear teeth, the gear moves and said lower clamp is pivotable away from the upper clamp into the open position. The side of the lower clamp adjacent to the upper clamp may be fixedly installed with a protective pad.

Advantageous Effects of Invention

Brief Description of Drawings

Description of Drawings

[0007] Fig. 1 shows a capo of the present invention.

[0008] Fig. 2 shows an exploded view of the capo in Fig. 1.

[0009] Fig. 3 shows an interior view of the capo of Fig. 1.

Mode for the Invention

Mode for Invention

[0010] Figs. 1 - 3 shows a capo 1000 having an upper clamp 100 and a lower clamp 200. The upper clamp 100 and the lower clamp 200 form a clamping hinge structure and are pivotably connected to each other. Under the pressure or action of lower clamp bias mechanism 370, the lower clamp 200 rotates clockwise into the open position. A user can close the capo 1000 by pressing the lower clamp 200 by hand to the upper clamp 100 and reducing the distance between the upper clamp 100 and the lower clamp 200.

[0011] An unlocking handle 300 within the upper clamp 100 cooperate with a gear 350 to permit the capo 1000 to open and close. The handle 300 is hinged to the upper clamp 100 at pin 340 and biased by a handle bias mechanism 360. The handle 300 has a first end 310 and a second end 330. See Fig. 3. The handle 300 selectively engages gear 350 in a ratchet fashion. In one embodiment the gear 350 may be a toothed, one-way needle bearing clutch. The outer surface of the gear 350 has teeth 352 and the core of the gear 350 has one-way, rolling pin bearings 354. Bearings 354 rotate counterclockwise but not clockwise.

[0012] When the first end 310 of handle 300 is unpressed or untouched, the handle bias mechanism 360 is engaged or active and the second end 330 of handle 300 engages the teeth 352. With the handle 300 engaging the gear 350, the gear 350 is static and the

lower clamp 200 cannot move clockwise. However, the one-way bearings 354 within the gear 350 **can move and** allows the lower clamp 200 to move counterclockwise around gear pin 356. The lower clamp 200 is pivotable and moves toward the upper clamp 100 into a closed position. As a result, the capo 1000 is locked on the guitar neck and can be quickly and easily installed on the guitar string.

- [0013] When the first end 310 of handle 300 is pressed, the handle bias mechanism 360 is disengaged or inactive and the second end 330 disengages the teeth 352. Here the gear 350 and the lower clamp 200 are able to move clockwise due to the influence of bias mechanism 370. See Fig. 2. As described above, the handle bias mechanism 360 enables the second end 330 of handle 300 to selectively engage the teeth 352 of gear 350. Here the lower clamp 200 pivots about the gear pin 356 to increase the distance between the upper clamp 100 and the lower clamp 200 and release the guitar fingerboard or neck. As a result, the capo 1000 is open, unlocked and can be quickly removed from the guitar neck.
- [0014] The side of the lower clamp 200 adjacent to the upper clamp 100 may be fixedly installed with a protective pad 210. Likewise, the upper clamp 100 may have a protective pad 110 disposed on the side adjacent the lower clamp 200. In one embodiment, the protection pads may be of elastic silicone material or similar material. When placed on a guitar neck, the capo 1000 presses guitar strings. After the guitar strings are pressed, the protective pad 210 on the lower clamp 200 provides elastic force for clamping the guitar strings due to extrusion deformation.
- [0015] In one embodiment, the gear 350 is disposed in the lower clamp 200. In another embodiment, the gear 350 may be positioned and disposed within the lower clamp 200 and enclosed by a hanging portion of the upper clamp 100. In yet another embodiment, the pin 356 connect the gear 350 to the lower clamp 200 and upper clamp 100. In another embodiment, the pin 356 is disposed on a lower portion of the upper clamp 100 and passes through the lower clamp 200 to be supported between each clamp. Bias mechanisms 360 and 370 may be any tension or spring mechanism. In one embodiment, the bias mechanism 370 may be a rebound spring. In one embodiment, the handle bias mechanism 360 may be but is not limited to a spring, a reset spring leaf or the like.
- [0016] While specific embodiments of the invention have been described and illustrated, such embodiments should be considered illustrative of the invention only and not as limiting the invention as construed in accordance with the accompanying claims. One of ordinary skill in the art could alter the above embodiments or provide insubstantial changes that may be made without departing from the scope of the invention.

Claims

- [Claim 1] A clamping capo for use with a stringed instrument comprising:
an upper clamp;
a lower clamp, said lower clamp pivotably connected to the upper clamp, said lower clamp pivotable between an open position and a closed position;
a gear disposed within the lower clamp, the gear having gear teeth on an outer gear surface and bearings on an inner gear surface; and
a handle having a first end and a second end, the second end selectively engaging said gear teeth.
- [Claim 2] The clamping capo of claim 1, wherein the bearings are one-way needle bearings.
- [Claim 3] The clamping capo of claim 1, wherein the bearings rotates in one direction.
- [Claim 4] The clamping capo of claim 1, wherein the bearings rotate counterclockwise.
- [Claim 5] The clamping capo of claim 1, wherein when the second end of the handle engages the gear teeth, the gear is static and said lower clamp is pivotable counterclockwise toward the upper clamp into the closed position.
- [Claim 6] The clamping capo of claim 1, wherein when the second end of the handle disengages the gear teeth, the gear moves and said lower clamp is pivotable clockwise away from the upper clamp into the open position.
- [Claim 7] The clamping capo of claim 1, further comprising a lower clamp bias mechanism, wherein the lower clamp rotates clockwise under the action of the lower clamp bias mechanism.
- [Claim 8] The clamping capo of claim 1, wherein the handle is pivotably connected to the upper arm.
- [Claim 9] The clamping capo of claim 1, further comprising a handle bias mechanism, wherein the second end of the handle selectively engages the gear teeth under the action of the handle bias mechanism.

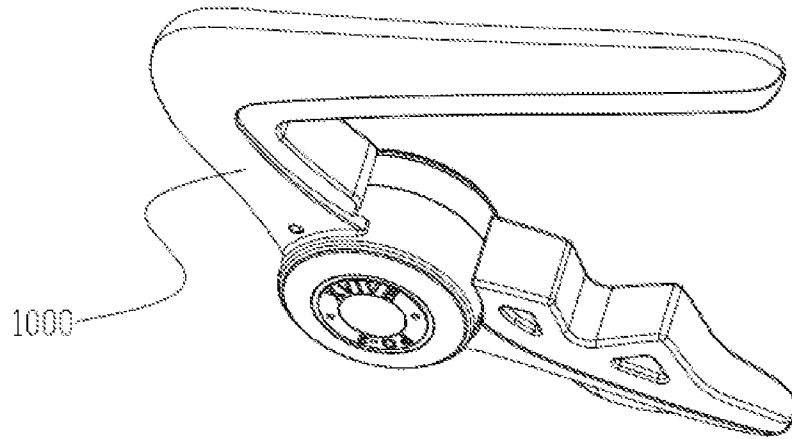


FIG. 1

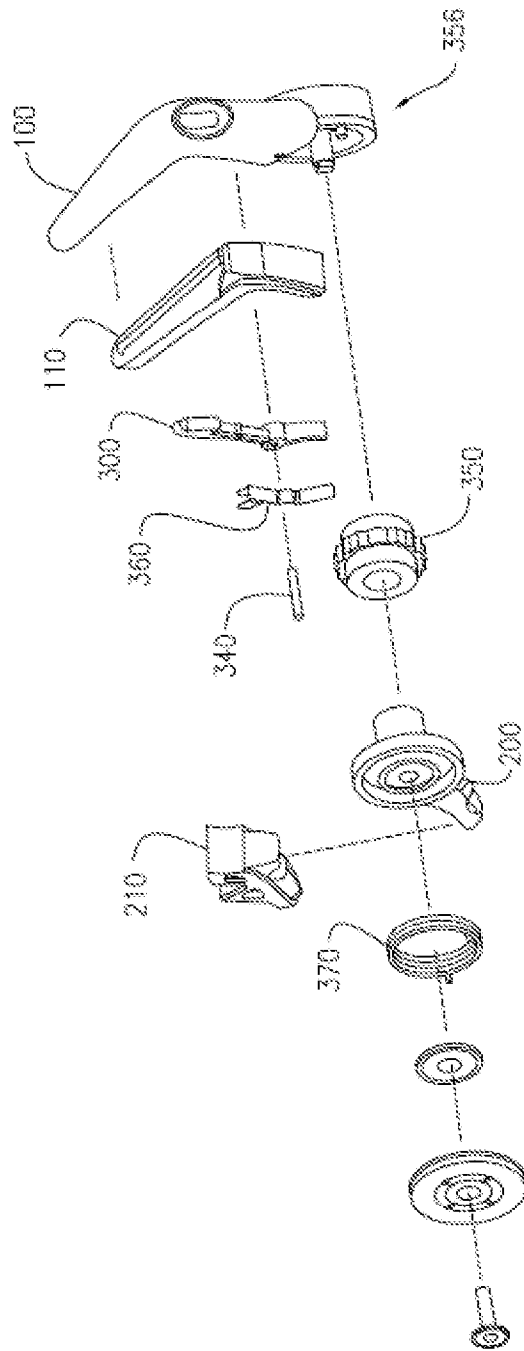


FIG. 2

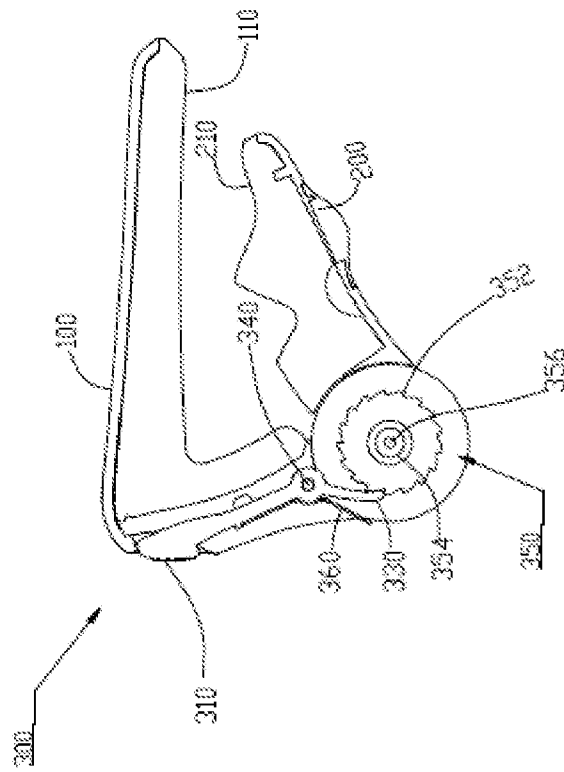


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/082073

A. CLASSIFICATION OF SUBJECT MATTER		
G10D 3/147(2020.01)j		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
G10D3/-		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
EPODOC,WPL,CNPAT,CNKI:capo, capotasto,adjust+,string+,clip,clamp+,gear+,tooth,teeth,ratchet, ratch, bearing+, handle, one way, mesh+, engag+, bias, spring		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 207217091 U (HU, Tao) 10 April 2018 (2018-04-10) description, paragraphs [0013]-[0017], figures 1-4	1-9
A	CN 205028640 U (CHERUB TECHNOLOGY CO., LTD.) 10 February 2016 (2016-02-10) the whole document	1-9
A	CN 203706649 U (CHERUB TECHNOLOGY CO., LTD.) 09 July 2014 (2014-07-09) the whole document	1-9
A	CN 205789061 U (GUANGZHOU ROMANCE MUSICAL INSTRUMENTS CO., LTD.) 07 December 2016 (2016-12-07) the whole document	1-9
A	CN 206293150 U (CHERUB TECHNOLOGY CO., LTD.) 30 June 2017 (2017-06-30) the whole document	1-9
A	US 6459025 B1 (J. D'ADDARIO & CO., INC.) 01 October 2002 (2002-10-01) the whole document	1-9
A	KR 20140006562 A (HANKUK PRECISION CO., LTD.) 16 January 2014 (2014-01-16) the whole document	1-9
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
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Date of the actual completion of the international search		Date of mailing of the international search report
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Name and mailing address of the ISA/CN		Authorized officer
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INTERNATIONAL SEARCH REPORT
Information on patent family members

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Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 207217091 U	10 April 2018	None	
CN 205028640 U	10 February 2016	None	
CN 203706649 U	09 July 2014	None	
CN 205789061 U	07 December 2016	None	
CN 206293150 U	30 June 2017	None	
US 6459025 B1	01 October 2002	None	
KR 20140006562 A	16 January 2014	KR 101364606 B1	20 February 2014