United States Patent

Oka

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[54] THREE-FOLD METAL FITTING FOR ADJUSTING STEPLESSLY THE LENGTH OF A WATCH BAND

[72] Inventor: **Motoo Oka,** Urawa, Japan

[73] Assignee: **Kabushiki Kaisha Bambi,** Tokyo, Japan

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[51] **Int. Cl.** **A44c 5/18**

[58] **Field of Search** ..... 24/71 J, 248 SL, 249 SL, 265 WS

[56] **References Cited**

UNITED STATES PATENTS

1,695,487	12/1928	Hadley	24/71
3,425,104	2/1969	Mochizuki	24/265
2,159,079	5/1939	Goulden	24/71
1,700,084	1/1929	Schwartz	24/71

Primary Examiner—Bobby R. Gay
Assistant Examiner—Garry Moore
Attorney—Cushman, Darby & Cushman

[57] **ABSTRACT**

A three-fold metal fitting for a watch band capable of adjusting steplessly a length of the watch band, comprising an upper and a lower metal fittings, one strap and the other adjustable strap of the watch band being fixed thereto, respectively, and a first and a second foldable connecting plates pivotably mounted at each one end to each other and at each other end to the upper and the lower metal fittings, respectively, wherein the two metal fittings are constructed to come into contact with each other at a time of joining while the pivotably mounted portions of the foldable connecting plates being accomodated in the whole metal fitting, and fastening of the straps is carried out within the internal space defined by the upper and the lower metal fittings, especially the adjustable strap being optionally positioned by guiding it along the internal surface of the second foldable connecting plate fixed to the lower metal fitting.

8 Claims, 4 Drawing Figures

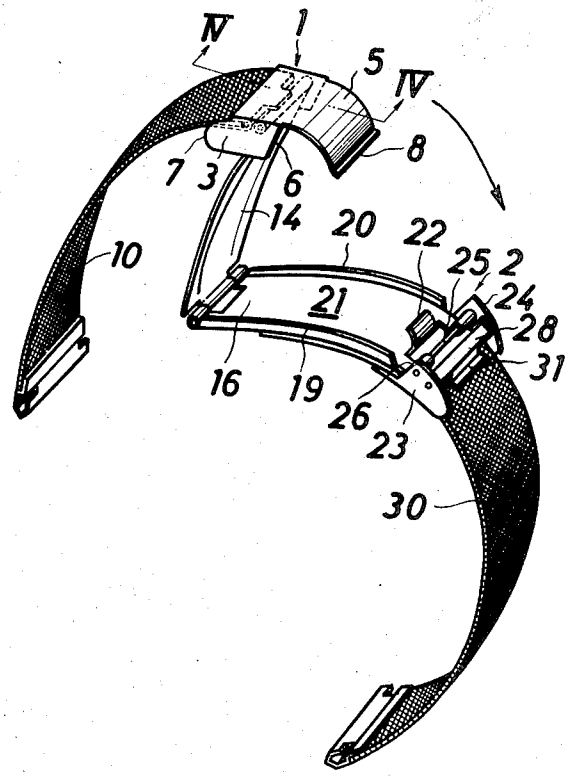


FIG.2

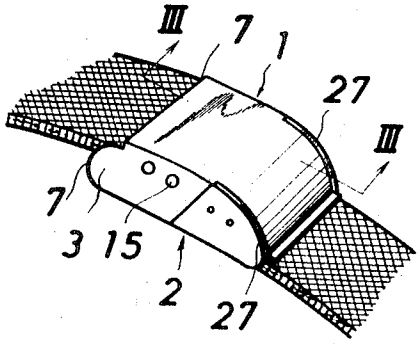


FIG.1

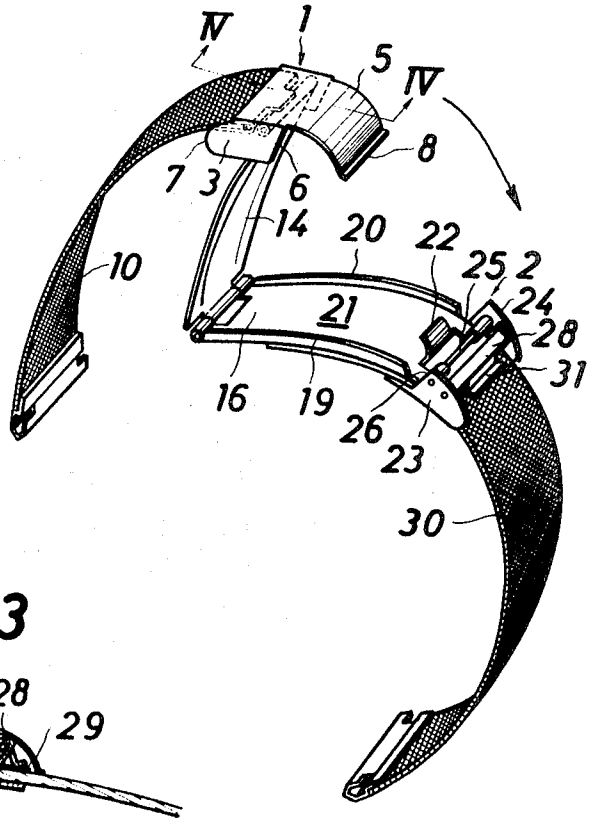


FIG.3

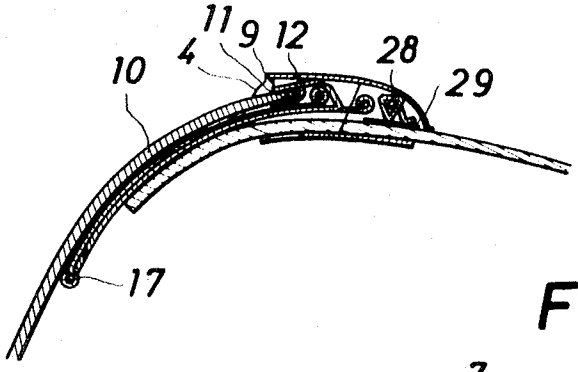
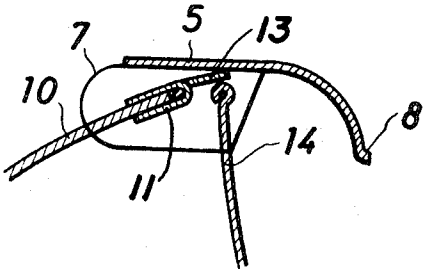


FIG.4



THREE-FOLD METAL FITTING FOR ADJUSTING STEPLESSLY THE LENGTH OF A WATCH BAND

FIELD OF THE INVENTION

The present invention relates to a three-fold metal fitting for watch band capable of adjusting steplessly the length of a watch band made of metal net, synthetic leather, synthetic cloth, etc.

BACKGROUND OF THE INVENTION

In a known three-fold metal fitting, a means for adjusting the length of the watch band includes a metal plate having adjusting holes spaced from one another and an adjusting axle to which one strap of the watch band is fixed and which is detachably fitted in any one pair of said adjusting holes. The range of adjustment is limited to the length of the metal plate, for the free ends of both straps are fixed to the metal plate. Furthermore, indefinite adjustment is impossible because the increment or decrement of the band length is defined necessarily by the interval between adjusting holes, so that the fine adjustment of the watch band in length could not be achieved. In order to expand the range of adjustment, larger metal plates having more adjusting holes spaced from one another must be used. In addition, the depreciation of the aesthetical appearance because of the adjusting holes being exposed on the side walls of the metal plate is also disadvantageous.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a three-fold metal fitting capable of adjusting steplessly the length of a watch band.

Another object of the present invention is to provide a compact three-fold metal fitting with no adjusting holes, wherein the metal fitting is divided into upper and lower ones to which both of the straps can be anchored, respectively, so as to permit the stepless adjustment of the length of the watch band.

A further object of the present invention is to provide a three-fold metal fitting, wherein the pivotally mounted portions of foldable connecting plates are accommodated in the whole metal fitting when said plates are folded, thereby to prevent the connecting plates from deviating in the transverse direction of the watch band.

A still further object of the present invention is to provide a three-fold metal fitting, wherein one foldable connecting plate is so formed as to accommodate completely the other when they are folded, so that the thickness of the folded metal fitting is reduced.

A still further object of the present invention is to provide a three-fold metal fitting, wherein fastening of the straps is carried out within the internal space defined by the upper and lower metal fittings so that no fastening means is seen from outside.

A still further object of the present invention is to provide a smart three-fold metal fitting,wherein the free end of the upper metal fitting is formed as a streamlined curved plate which comes into contact with the upper surface of the adjustable strap, so that no unsightly gap may be formed between the free end of the upper metal fitting and the strap.

A still further object of the present invention is to provide a three-fold metal fitting, wherein a stopper flap is provided on the end of one strap which is fixed to the upper metal fitting, said stopper flap being arranged between the upper metal fitting and a mounting member for one foldable connecting plate which is fixed to the upper metal fitting, whereby said one strap is prevented from depending from the upper metal fitting at an acute angle, thus permitting smooth folding and unfolding of the fitting.

A still further object of the present invention is to provide a three-fold metal fitting, wherein the adjustable strap is optionally positioned by passing it through a space defined in width which is formed between the lower metal fitting and a pressing plate by swinging an eccentric pressing axle into the releasing position.

A still further object of the present invention is to provide a three-fold metal fitting, wherein the free end of the adjustable strap is guided along the outside surface of the connecting plate fixed to the lower metal fitting, thereby to make the insertion of the strap smooth.

A still further object of the present invention is to provide a three-fold metal fitting, wherein the opening of the lower metal fitting is covered by the curved plate of the upper metal fitting when both fittings are snapped in, so that the eccentric axle for fixing the adjustable strap cannot be operated by accident from outside, thus ensuring positive fastening of the strap.

A still further object of the present invention is to provide a three-fold metal fitting, wherein the upper and lower metal fittings are so constructed as to come into tight contact with each other when they are joined, thereby to exclude any looseness of the whole fitting.

These and other objects and features of the present invention will be better understood upon consideration of the following detailed description and the accompanying drawings in which:

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a preferred embodiment of the present invention, the metal fitting being unfolded and the upper metal fitting being separated from the lower; FIG. 2 is a perspective view of the folded metal fitting; FIG. 3 is an enlarged sectional view along the line III—III in FIG. 2; and FIG. 4 is an enlarged sectional view along the line IV—IV in FIG. 1.

DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENTS OF THE INVENTION

Referring now to FIG. 1, an upper metal fitting is designated at **1** and a lower one at **2**. The upper metal fitting comprises two opposed downwardly bent walls **3, 4** and a curved plate **5**. The bent walls **3, 4** extend from the middle of the curved plate **5** and partially project from the end thereof. The forward edge of the bent walls **3, 4** is formed as a tapered face **6** and the rear edge is an arcuate one **7**.

The forward edge of the curved plate **5** is slightly bent upward at **8**. When the upper fitting is to be separated from the lower, the tip of a finger nail is inserted under this bent portion **8**. Inserted through the opening **9** of the upper fitting is a fastener **11** with one strap **10** fastened thereto, which fastener is pivotally mounted between bent walls **3, 4** by means of a pivot **12**. The fastener **11** has a stopper piece **13** arranged between the curved plate **5** and a pivot **15** on which a foldable connecting plate **14** is fitted. It is achieved in this way that the strap **10** is prevented from being bent acutely at the opening of the upper fitting **1**. The pivot **15** is rotatably mounted in the bent walls **3, 4** of the upper fitting **1**.

The connecting plate **14** is hinged at the other end to one end of another connecting plate **16** by means of a pivot **17**. The other end of the connecting plate **16** is pivotally mounted on the lower metal fitting **2** by means of a pivot **25**, as described in detail hereinafter. The connecting plate **16** has longitudinal upright walls **19, 20** on both sides, formed integral with the principal horizontal portion by bending. The height of these upright walls **19, 20** is chosen somewhat larger than the thickness of the connecting plate **14** and the recess **21** defined by the upright walls **19, 20** has a width somewhat greater than that of the connecting plate **14**, so that the latter is completely included in the recess **21** when both connecting plates **14, 16** are folded. The connecting plate **16** has at the other end an engaging flap **22** cut out therefrom and the remaining parts are pivotally fitted on the pivot **25** supported by the bent walls **23, 24** of the lower fitting **2**.

The bent walls **23, 24** of the lower fitting are formed at one end as a tapered face **26** complemental to the tapered face **6** of the bent walls **3, 4** and at the other end as an arcuate edge **27**. Rotatably mounted in the bent walls **23, 24** is an eccentric pressing axle **28**, to which a pressing plate **29** looking a chan-

nel, seen from the longitudinal direction of the strap **10**, is coaxially fixed. Another strap **30**, an adjustable strap, is inserted between the pressing plate **29** and the bottom plate of the lower fitting **2** and held by the eccentric pressing axle **28** and the pressing plate **29**. The eccentric pressing axle **28** is provided with an actuating member **31** for setting the axle **28** to the pressing and releasing positions.

To insert the strap **30** into the three-fold metal fitting thus constructed, the actuating member **31** is moved counter-clockwise in FIG. **1** so as to swing the eccentric pressing axle **28** counter-clockwise in FIG. **1** to release the pressure of the pressing plate **29**, so that a larger space through which the strap **30** may be inserted is formed between the pressing plate **29** and the bottom plate of the lower fitting **2**. After the free end of the strap **30** has been inserted to a desirable length, the actuating member **31** is swung clockwise in FIG. **1**, so that the eccentric pressing axle **28** is also turned in the same direction to apply pressure to the pressing plate **29**. The strap **30** is thus held between the pressing plate **29** and the bottom plate of the lower fitting **2**. Then the upper fitting **1** is snapped in the lower one **2**, as shown by a solid arrow in FIG. **1**. When it is snapped in the lower fitting **2**, the engaging flap **22** abuts elastically against the pivot **15** and at the same time the curved plate **5** of the upper fitting is fitted between the upright walls **23**, **24** of the lower fitting **2**. Thus, the tapered faces **6** and **26** of both fittings **1** and **2** come into tight contact with each other. Deflection of the strap **30** in the width direction can be prevented by the lower edges of the bent walls **3**, **4** of the upper fitting **1** (see FIG. **3**).

To unfold the metal fitting to separate the upper and lower fittings **1** and **2**, a counter-clockwise acting force is applied to the curved plate **5** by hooking the tip of a finger nail on the bent portion **8** thereof, so that the engaging flap **22** is released from the pivot **15**. The upper fitting **1** can be thus easily separated from the lower one **2** (see FIG. **1**). With the three-fold metal fitting according to the present invention, the diameter of a watch band can be optionally and steplessly adjusted.

It is to be noted that the present invention is not intended to be restricted to the described embodiment, but many modifications and changes may be possible without departing from the scope of the appended claims.

What is claimed is:

1. A three-fold metal fitting for adjusting steplessly the length of a watch band, comprising an upper metal fitting having a curved plate and two downwardly bent upright walls with tapered and arcuate edges, one strap of said watch band being fixed to said upper metal fitting; a lower metal fitting having two upwardly bent upright walls, the other adjustable strap of said watch band being fixed to said lower metal fitting; a first foldable connecting plate pivotally mounted at one end to said upper metal fitting; a second foldable connecting plate pivotally mounted at one end to the other end of said first foldable connecting plate, the other end of said second foldable connecting plate being pivotally mounted in said upright walls of said lower metal fitting; an engaging flap provided on the other end of said second foldable connecting plate, said engaging flap being adapted to be engaged by a mounting member for said second foldable connecting plate; and a pressing plate and an eccentric pressing axle coaxially arranged and pivotally mounted in said upright walls of said lower metal fitting for fastening said adjustable strap; one end of said upright walls of said lower metal fitting being formed as a tapered face complemental to the tapered face of said bent walls of said upper metal fitting and the other end thereof being shaped arcuate.

2. A three-fold metal fitting as set forth is claim **1**, wherein a pressing plate and an eccentric pressing axle for fixing said adjustable strap of said watch band are coaxially mounted in said upright walls of said lower metal fitting.

3. A three-fold metal fitting as set forth in claim **2**, wherein said eccentric pressing axle is pivotally mounted in said upright walls of said lower metal fitting.

4. A three-fold metal fitting as set forth in claim **3**, wherein an actuating member for swinging said eccentric pressing axle is provided at an arbitrary position on said axle.

5. A three-fold metal fitting for adjusting steplessly the length of a watch band, comprising an upper metal fitting having a curved plate and two downwardly bent upright walls, with one strap of said watch band being fixed to said upper metal fitting; a lower metal fitting having two upwardly bent upright walls, with the other adjustable strap of said watch band being fixed to said lower metal fitting; a first foldable connecting plate rotatably mounted at one end on a pivot provided into said upright walls of said upper fitting; a second foldable connecting plate pivotally mounted at one end to the other end of said first foldable connecting plate and being at the other end rotatably mounted on a pivot provided in said upright walls of said lower metal fitting; an engaging flap provided on the other end of said second foldable connecting plate; and a pressing plate and an eccentric pressing axle coaxially arranged and pivotally mounted in said upright walls of said lower metal fitting for fastening said adjustable strap, characterized by that:

1. said bent walls of said upper fitting extend from the middle of said curved plate, partially projecting from the end of said curved plate, being formed at the forward edge as a tapered face, while at the rear edge as an arcuate face and accomodate the free end of said adjustable strap therebetween, which is inserted between said pressing plate and the bottom plate of said lower fitting;
2. said curved plate of said upper fitting is constructed to be so curved and bent like a taper in the cross-section from a longitudinal direction and be fitted between upright walls of said lower fitting to cover the opening of said lower fitting;
3. said engaging flap formed by cutting out itself is rotatably mounted on said pivot of said lower fitting and is constructed to abut elastically against said pivot of said upper fitting when the latter is snapped in said lower fitting;
4. said pressing plate is constructed to be in the form of a channel, seen from a longitudinal direction of said one strap and said eccentric pressing axle is constructed to be in the form of a triangle, seen from the lateral direction of said adjustable strap.

6. A three-fold metal fitting as set forth in claim **5** wherein said curved plate is provided along the whole lateral width of its free end with an upwardly bent portion of such a gentle slope in the form of a crescent as not to hurt the tip of the finger nail, serving as a hook for said tip for use when said upper metal fitting is to be separated from said lower one.

7. A three-fold metal fitting as set forth in said claim **5** wherein a fastener is inserted through the opening of said upper fitting with said one strap being fixed thereto, being rotatably mounted between said bent walls of said upper fitting by an another pivot and has a stopper flap arranged between said curved plate and said pivot of said upper fitting to prevent said strap from being bent acutely at the opening of said upper fitting.

8. A three-fold metal fitting as set forth in said claim **5** wherein said second foldable connecting plate has longitudinal upright walls on both sides formed by bending which results in a comfortable wearing at the intersections so as to accomodate completely said first foldable connecting plate, with the height thereof being somewhat larger than the thickness of the latter and is hinged by means of a pivot on the same plane as it to said first foldable connecting plate so as to reduce the folded plates as much as possible.

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