

PATENT SPECIFICATION

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(54) ADJUSTABLE EXPANSION BAND

(71) We, **TIMEX CORPORATION**, a Corporation organised under the Laws of the State of Delaware, United States of America of Waterbury, Connecticut 06720, United States of America, do hereby declare the invention, for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to expanding bands suitable, for example, for wristwatches.

A known type of expanding band employs two rows of overlapping links, U-shaped members connecting alternate links between rows, and spring members contained within the links so that the links can be stretched apart and returned by the springs. Although bands of this type are very useful and economical to produce, nevertheless it becomes desirable to have an easy means for breaking into the band at some point along its length, either for the purpose of making adjustments in overall length or for connecting or disconnecting sub-assemblies for manufacturing convenience. One band sections which can be disconnected at any desired spot is shown in Patent Specification No. 801,850 and employs special spring members extending into opposite link rows and employs links of special shape.

An adjustable expanding band is shown in United States Patent Specification No. 3,416,305 and employs a special shape spring member with a section extending from one row of links and to a link in the other row, this catch member being actuated so as to disengage the links with a longitudinal sliding motion. The remainder of the watch band sections are of the conventional U-shaped clip and spring type and consequently it is necessary to employ two different types of sections in the band, with the appearance being slightly different.

It would be desirable to have an adjustable expanding band enabling the simple and widely accepted U-shaped clip and leaf-spring construction to be used, with provision for disconnecting the sections and re-attaching them at desired locations.

Accordingly, one object of the present invention is to provide an improved expanding band which permits engagement or disengagement at selected locations along the band.

Another object of the invention is to provide an economical and improved construction for an adjustable expanding band for a wristwatch.

The present invention accordingly provides an expanding band of the type having two rows of overlapping links, clip members connecting alternating links between rows, and spring members disposed within said links, and further comprising a pair of asymmetrical legs on each of said clip members disposed in the ends of alternating links, said clip members being arranged at opposite ends of the links, and spring retaining means disposed within said links arranged to hold said spring members and to slide longitudinally within the links between locked and unlocked positions, said spring members each having spring arms co-operating with the legs of both opposite clip members in the locked position and co-operating with only one leg of a clip member in the unlocked position.

Preferably, the clip members have legs of unequal length.

The invention will now be further described with reference to the accompanying drawings, in which:—

Figure 1 is an end elevation view of an expanding band section of the type using the present invention;

Figure 2 is a plan view of a band section as seen in Figure 1;

Figure 3 is an enlarged cross-sectional

view of a pair of connected links, taken along III-III of Figure 2;

Figure 4 is a perspective view of one of the expansion band links;

5 Figure 5 is a perspective view of a spring retaining means;

Figure 6 is a perspective view of a spring member;

10 Figure 7 is a perspective view of a preferred clip member;

Figures 8a and 8b show juxtaposed upper and lower link assemblies positioned for engagement with one another, with spring retaining means in unlocked position;

15 Figure 9 shows the upper and lower link assemblies in engaged and locked position, and

Figure 10 is a partial perspective view of engaged upper and lower link assemblies.

20 Referring now to Figure 1 of the drawings, the expanding band shown generally at 1 includes a first or upper row of links 2 and a second or lower row of links 3. The links are arranged in overlapping fashion and employ clip members for connecting alternate links between rows. The upper row 2 is made up of individual upper link assemblies 5 and similarly the lower row 3 is made up of lower link assemblies 6. Very often, the upper link assemblies 5 have decorative covers, while the lower link assemblies 6 simply have turned up tabs on the end to retain the clip members, these details not being material to the present invention.

35 Figure 2 is a plan view of the upper link assemblies 5 and Figure 3, which is an enlarged section view, shows a *per se* typical and well-known means of construction whereby U-shaped clips 4 interconnect the upper and lower assemblies, whereas leaf-spring members contained within the links serve to press the legs of the clips against the walls of the links so as to provide a spring return action when the band is stretched. The foregoing construction is known in the art.

Referring to the improvements which comprise the present invention, a typical 50 link 8 is shown in Figure 4. Identical links 8 may be used in both the upper and lower link assemblies 5, 6 respectively. Link 8 is a rectangular sheet metal enclosure with turned up end tabs 9 on opposite ends and open on one longitudinal side thereof except for oppositely directed tabs 10 adjacent one end thereof and oppositely directed tabs 11 spaced from the opposite end thereof. Crimped portions 12 on tabs 10 and 11 60 serve to lock the spring retainers in engaged or in disengaged positions as will be further described.

Shown in Figure 5 is a spring retainer 13, which may be identical in the upper and 65 lower link assemblies 5, 6, respectively.

Spring retainer 13 is an open-ended rectangular sheet metal enclosure which is slightly smaller in its width and height than a link 8 so that it will fit inside a link 8, and shorter than link 8 so that it can slide longitudinally therein between engaged and disengaged positions. The retainer 13 has folded over sections 14 extending toward one another and having oppositely directed apertures 15 and crimped portions 16 spaced so as to register with crimped portions 12 in the links 8.

Shown in Figures 6 are the leaf spring members 17 which include on either side of a bowed portion 19 oppositely extending 80 spring legs 18 having turned up ends 20.

Referring to Figure 7, the clip members are shown as 21 to be generally U-shaped with a base section 22 and legs 23 and 24 of unequal length. The aforementioned 85 spring members 17 and clip members 21 are preferably all interchangeable and may be used either in upper or lower link assemblies or at opposite ends of the links as will be evident from the description which follows.

In Figures 8a and 8b an upper link assembly 5 and a lower link assembly 6 are shown separated from one another and with the spring retainers in the unlocked position. 90 The spring retainer 13 in the upper assembly is moved all the way to the right (by engaging a tool or probe in hole 15). Similarly the lower retainer 13 is moved all the way to the left.

The spring members 17 are disposed within the retainers, and held in position by the bow portion 19 resting in a slot 25 in the bottom wall (see Figure 5). The clip members 21 are arranged with the long legs 24 held in place by one end of the spring and the short legs 23 free to engage or disengage the opposing link assemblies in the unlocked position of the spring retainers.

Referring now to Figure 9, the upper and 110 lower link assemblies 5, 6 are shown in a locked and engaged position. The upper spring retainer 13 has been moved longitudinally to the left so that the end of the spring arm 18 rests on the short arm 23 of the left-hand clip. The lower retainer 13 has been similarly moved to the right so that the right hand spring arm 18 also rests on the short arm 23 of the clip. The retainers are locked in this position, since the crimped portions 16, 12 no longer are in registry, and the crimped portions 16 are now positioned against the tab members 10, 11. When the assemblies are engaged and locked as shown in Figure 9, the spring 125 members 17 co-operate with opposite ends of clip members 21 in the same fashion as a conventional expanding band of this type.

Reference to the perspective exploded view of Figure 10 further illustrates the man- 130

ner in which the parts are assembled.

In operation, when the parts are assembled and it is wished to disengage them, it is only necessary to spread the link assemblies slightly to expose the slots 15 and to utilize a probe or pointed instrument to slide the spring retainers 13 longitudinally within the links. The upper spring retainer is slid in one direction and the lower spring retainer in the opposite direction, whereupon the upper and lower link assemblies, and thus the attached band sections, may be disengaged since the parts will now all pass by the short legs 23 of the clip members. Re-engagement of the sections or removal of one or more links is accomplished in the same manner. The expanding band may be entirely composed of links as described, or the spring retainers, special springs and clips omitted and conventional springs and clips substituted, the appearance of the expansion band to all intents and purposes being entirely the same whether or not the special parts are employed.

While there has been described what is considered at present to be the preferred embodiment of the invention, other modifications within the scope of the appended claims will occur to those skilled in the art. it will for example be apparent that various types of asymmetric clip members and means for moving the spring members between a locked and unlocked position can be utilised.

WHAT WE CLAIM IS:—

1. An expanding band of the type having two rows of overlapping links, clip members connecting alternating links between rows, and spring members disposed within said links, and further comprising

a pair of asymmetrical legs on each of said clip members disposed in the ends of alternating links, said clip members being arranged at opposite ends of the links, and spring retaining means disposed within said links arranged to hold said spring members and to slide longitudinally within said links between locked and unlocked positions, said spring members each having spring arms co-operating with the legs of both opposite clip members in the locked position and co-operating with only one leg of a clip member in the unlocked position.

2. An expanding band according to Claim 1, wherein said clip members have legs of unequal length and arranged with the short leg of one clip and the long leg of the oppositely directed clip facing one another in the same link.

3. An expanding band according to Claim 1, wherein said spring members are disposed within the retainers.

4. An expanding band according to Claim 1, wherein said clip members are U-shaped with legs of unequal length and wherein the spring members are leaf-springs having opposite spring arms arranged to bear on both clip members in the locked position and arranged to bear on only one clip member in the unlocked position.

5. An expanding band substantially as hereinbefore described with reference to Figures 1 to 10 of the accompanying drawings.

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