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COMPLETE SPECIFICATION

Improvements in and relating to Extensible Chain Bands, more particularly Wrist Watch Bracelets

We, RODI & WIENENBERGER AKTIENGESELLSCHAFT, of Bleichstrasse 58/68, Pforzheim/Baden, Germany, a German Company, 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 an extensible chain band, more particularly a wrist watch bracelet, which consists of hollow links and links connecting the same together in an articulated manner and so that they can be stretched apart, which connecting links can pivot against spring action. The invention consists in this that the hollow links are constituted by two layers of cylindrical sleeves of any desired section which are arranged transversely to, and relatively staggered, in the longitudinal direction of the chain band, and the connecting links are constituted by U-shaped connecting bows arranged in the longitudinal edges of the chain, which bows are inserted in pairs with one of the limbs of each in the open end of a sleeve of the one layer and with the other limb in one of the adjacent sleeves of the other layer which are in a staggered position, and in that a leaf spring comprising a bent spring plate is provided in each sleeve, which spring plate keeps the connecting bows firmly in the sleeve and acts by spring action against their pivoting when the chain is stretched or bent. More particularly, the construction may be such that the limbs of the connecting bows lying with play in the sleeves have a greater width than the thickness or height thereof, and are provided on the inside with a transverse groove, in which engages the bent up end of the spring plate arranged longitudinally in the sleeve. The feature of the chain band according to the invention is its very great extensibility and flexibility. When the band is stretched no gaps and no narrowing take place so that it always retains the same closed appearance. Moreover, the chain band is composed of only three different parts, namely the sleeves, the connecting bows and the spring plates, whereby its construction and assembly is extremely simple and its manufacture very economical, especially as the parts can be inserted within one another without any soldering or riveting. Consequently, the individual parts can also be easily exchanged. Finally, there is the special advantage that the spring plates which are used are extremely resistant to the elastic stresses that arise, so that one need not fear that it will become slack or break. The sleeves may be of any cross-section so that the chain can be adapted to the most different tastes.

The invention further comprises the connecting member for connecting the particular chain band to an article, for instance a wrist watch casing having a closed attachment loop. The connecting member is characterised by this that it comprises two sleeves connected together, one of which is ~~connected~~ as a connecting sleeve to be attached to the chain band, and the other one has an attachment sleeve provided with a slot, to be closed by a sliding cover and be pushed over the attachment loop of the article, in such a position that after the engagement, the covering lid comes to lie between the arms of the attachment loop, when the chain is in the position of use. An especially advantageous form of construction is obtained by an arrangement wherein the connecting sleeve to be attached to the chain band constitutes the last link, preferably made half the width of one layer of the links of the chain band, and is connected by the last pair of lateral connecting bows with the last linking sleeve of the other layer, whilst the attachment sleeve has a height corresponding to the total thickness of the bracelet. The characteristic features of the connecting

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member are that it can be made of bent sheet metal in a very simple manner so that it can be manufactured very cheaply and can be attached without any tools, and that it is greatly ensured against becoming unintentionally disconnected.

Various examples of carrying the invention into effect are illustrated in the accompanying drawings in which:—

Figure 1 is a side view of part of a closed band partly in section;

Figure 2 is a side view of part of the extended band, partly in section;

Figure 3 is a plan view of a portion of the closed band, partly in section, on a smaller scale;

Figure 4 is a plan view of a part of the extended band, on the same scale as Figure 3;

Figure 5 is a perspective view of a spring plate;

Figure 6 is a perspective view of a connecting bow;

Figure 7 is a cross section through the chain band along line VII—VII of Figure 1 in which the connecting bow is left out from the left end of the sleeve, and

Figure 8 is a cross section of the chain band along the line VIII—VIII of Figure 2. Figures 5 to 8 are shown on a larger scale than Figures 1—4;

Figure 9 is a side view of a closed connecting link in connection with a chain band according to the invention;

Figure 10 is a plan view, partly in section of the connecting link, which is closed and is pushed over an attachment bar;

Figure 11 is a view of the connecting link provided on an attachment member with partly inserted sliding cover;

Figures 12, 13 and 14 show three stages of the insertion of the attachment bar or member into the connecting link, in side view and section through the attachment bar;

Figure 15 is a side view of the connecting link with inserted attachment bar in the position of use;

Figures 16 and 17 are two further forms of construction of a connecting link according to the invention in side view; and

Figure 18 is a plan view on a reduced scale of a wrist watch with the ends of the bracelet attached.

The chain bracelet comprises two layers of open-ended links constructed as sleeves 10 and 11, whereby the sleeves 10 of the upper layer are staggered with respect to the sleeves 11 of the lower layer in the longitudinal direction of the bracelet by half the width of the link. A bent spring plate 12 is inserted longitudinally into each sleeve 10, 11 which spring has bent up ends 13. The spring plates 12 are so arranged (Figures 7 and 8) that the bent up ends are directed towards the outer surfaces of the bracelet viz. in the sleeves 10 of the upper layer upwards and in the sleeves 11 of the lower layer downwards. The left end of Figure 7 shows the initial position of the spring plates 12 in the sleeves 10 and 11. The sleeves 10 and 11 are connected together by means of U-shaped connecting bows 14, the limbs 15 and 16 of which are of greater width *a* than their thickness *b* (Figure 1) and on their inside are flat and provided with transverse grooves 17 and 18, respectively (Figure 6). The connecting bows 14 are inserted in pairs next to each other with their upper limbs 15 in the open end of a sleeve 10 of the upper layer in such a manner that they come to lie over the bent up end 13 of the spring plate 12 and this end engages in the transverse groove 17. The lower limbs 16 of the connecting bows 14 are likewise introduced in pairs into the adjacent sleeves 11 of the lower layer in such a manner that they come to lie under the downwardly bent ends 13 of the spring plates 12 and these ends engage in the transverse grooves 18. The thickness *b* of the limbs 15 and 16 is such as compared with the open height of the sleeve 10, 11 that, through the insertion of the limbs 15, 16 of the connecting bows 14, the spring plates 12 obtain a slight preliminary tension (Figure 7), by which the bows 14 are pushed into the substantially vertical position seen in Figure 1, and the links of the bracelet are pulled close towards one another. The spring plates, however, as can be seen from Figure 7, retain their bent shape, so that the limbs lie with play in the sleeves and can turn therein. When the bracelet is extended (Figures 2, 4 and 8) the connecting bows 14 pivot, whereby the limbs 15 and 16 turn in the sleeves 10 and 11 and press flat the spring plates 12. Their tension is increased, so that when the pull on the bracelet ceases, they again force the connecting bows 14 into the nearly vertical position, shown in Figure 1, and pull together the sleeves 10 and 11.

The bracelet parts shown in Figures 3 and 4 are provided at each end with a connecting member 19. This connecting member, which is shown in Figures 9 to 15, is in one piece of sheet metal that is bent and formed into two sleeves 20 and 21. The sleeve 20 is adapted to the shape of the linking sleeves of the bracelet and has half their width, so that it forms a terminal member of the upper layer of the sleeves 10, making the said layer of the same length as that of the lower layer of the sleeves 11. The sleeve 21 corresponds to the whole thickness of the bracelet. It

has a receiving slot 22, the edges of which are provided with bent over insertion ledges 23 over which passes a sliding cover 24. The sleeve 20, however, may be made of the same width as the linking sleeves and be connected to the chain bracelet through the last pair of connecting bows 14, the limbs of which may be secured in the sleeve 21, for instance by soldering. However, they may also lie loosely in this sleeve, since the bows are held by the spring plate of the first linking sleeve 11. The connecting member is intended for the introduction of an attachment bar 25, which is provided with lateral arms 26 connected to any desired article, for instance, as shown in Figure 18, on the casing 27 of a wrist watch. The attachment bar 25 which is turned through an angle of 90° is inserted into the open connecting member 21 (Figure 12). Thereupon, the sliding cover 24 is pushed over (Figures 11 and 13) and finally the hanging-on bar is turned back into the position of use (Figure 14), so that one gets the relative position of the parts shown in Figures 10 and 15, in which the arms 26 so cover the ends of the sleeve 21 and sliding cover 24 that the cover is made safe against unintentionally sliding out.

Figures 16 and 17 show two other forms of the connecting member. Each one of them shows again the connecting sleeve 20, the connecting sleeve 21 with insertion ledges 23, and the sliding cover 24.

The constructional form of connecting member according to Figure 16 differs from that shown in Figure 9 in that its connecting sleeve 20 is arranged in the middle of the connecting sleeve 21 instead of being offset upwardly. The same holds good for the form of connecting member shown in Figure 17, in which the two sleeves 20, 21, moreover, are of rectangular shape. These two figures show that the shape of the connecting member 20, 21 may vary and thereby be adapted to chain links in accordance with the invention having a different shape from that specifically illustrated.

What we claim is:—

1. An extensible chain band, more particularly a wrist watch bracelet, made of hollow links and connecting links, which connect the hollow links in an articulated manner and so that they can be pulled apart and which pivot against spring action, characterised by this that the hollow links are constituted by two layers of cylindrical sleeves (10, 11) of any desired section which are arranged transversely to and relatively staggered to the longitudinal direction of the chain band, and the connecting links are constituted by U-shaped connecting bows (14) arranged in the longitudinal edges of the chain, which bows are inserted in pairs with one of the limbs (15) of each in the open end of a sleeve (10) of the one layer and with the other limb (16) in one of the adjacent sleeves (11) of the other layer which are in a staggered position, and in that a leaf spring comprising a bent spring plate (12) is provided in each sleeve, which spring plate keeps the connecting bows firmly in the sleeve and acts by spring action against their pivoting when the chain is stretched or bent.

2. A chain band according to Claim 1, characterised by this that the limbs (15, 16) of the connecting bows (14) lying with play in the sleeves (10, 11) have a greater width (a) than the thickness or height (b) thereof and are provided on the inside with a transverse groove (17, 18) in which engages the spring plate (12) arranged longitudinally in the sleeve with its bent up end (13).

3. A connecting member for chain bands according to Claims 1 and 2 for effecting a connection with an article having an attachment bar, for instance the casing of a wrist watch, characterised by this that it has two sleeves (20, 21) connected together, one of which is constructed as a connecting sleeve (20) to be attached to the bracelet and the other one serving as an attachment sleeve (21) is provided in such a position with an opening (22), to be pushed over the attachment bar (25) of the article (27) and be closed by a sliding cover (24) so that, after the hanging-on in the position of use of the bracelet, the sliding cover lies between the arms (26) of the attachment bar.

4. A connecting member according to Claim 3, characterised by this that the connecting sleeve (20), to be attached to the chain bracelet constitutes the last link, preferably made of half the width of a layer of the bracelet links (10) and is connected by the last pair of lateral connecting bows (14) with the last linking sleeve (11) of the other layer, whilst the attachment sleeve (21) has a height corresponding to the total thickness of the bracelet.

5. A connecting member according to Claim 3 or 4 characterised by this that it consists of a single piece of sheet metal that has been bent.

6. The improved extensible chain band, more particularly wrist watch bracelet, substantially as described with reference to the accompanying drawings.

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