PATENT SPECIFICATION

DRAWINGS ATTACHED

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Improvements in Elastic Link Chains and Bracelets.

COMPLETE SPECIFICATION

We, RODI & WIENENBERGER AKTIENGESELLSCHAFT, of Bleichstrasse 58-68, Pforzheim, Baden, Germany, a German body corporate, 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:

The present invention relates to an elastic link chain for decorative and utility purposes, in particular to expansion bracelets for holding a watch on a wrist, and which comprises hollow links and connecting members which connect the links together in such manner that the chain is capable of expansion or stretching under spring stress.

Link chains of this type are known which are formed by two rows or layers of hollow links which are laterally offset relative to one another in the longitudinal direction of the chain and having connecting members formed by substantially U-shaped connecting members disposed at the longitudinal sides of the chain, each group of two of these connecting members extend with one of their arms into the open end of a hollow link of one layer or row of the chain and, the other arm extending into the adjacent link of the other row or layer, disposed in offset relationship to the first row. The shanks of the U-shaped connecting member extending into the links act on springs located in the links. When the chain is stretched the springs are stressed by the shanks of the connecting members, because these shanks are deflected with respect to the links when the chain is stretched. In the known chains the connecting members are prevented from falling out of the links by being connected to the springs.

Such known types of chains have two disadvantages. On the one hand the openings of the links form comparatively sharp edges in the longitudinal sides of the chain, and on the other hand the connecting members and the springs must be constructed in special manner so that the springs can prevent the connecting members from falling out of the links. Both these disadvantages are eliminated by providing that each two adjacently located connecting members—whose shanks extend into the same link—are secure against falling out of the links by means of bent-over portions of the link walls of at least one row of the chain.

Preferably the portions of both the outer link walls of the outer links and also of the inner link walls of the inner links are bent over in such a manner as to cover two connecting members; these bent-over portions cover completely the openings formed in the longitudinal sides of the chain links and also the rear portions of the connecting members. In this manner the outer edges of the bracelet chain can be easily rounded off. Furthermore the chain obtains a substantially continuous and unbroken appearance on all sides.

A further disadvantage with known chains that the links of the inner row chain tend to grip hairs on the wearer's wrist, and that at the same time gaps are formed between the links of the outer row caused by curvature of the chain about the wearer's wrist can be eliminated by making the width of the links of the row in contact with the wearer's arm smaller than the width of the outer link row. Both these widths are taken in the direction of stretching the chain. In this way intermediate spaces are obtained between the surfaces of the inner links which rest against the wearer's arm even in the unstressed position of the bracelet chain, and in this way the wearer's skin and hairs will not be pinched by the inner links nor will spaces remain between the upper links. Whereas with the known bracelet chains the openings in the longitudinal sides of the hollow links of both rows are almost completely filled up by the connecting members,

a gap of very unpleasant appearance between the connecting members in the outer links would have to be accepted with the new embodiment as the outer links are now made wider than the inner links. This disadvantage does not occur however, because portions of the walls of the hollow links of one—preferably the outer—layer of the chain are bent over and these bent-over portions cover the gaps between the members and make them invisible. It is possible to produce the link chains with wide outer links and narrow inner links and at the same time to effect a considerable economy with respect to the chains of known type.

Nevertheless the unbroken surface appearance of the chain is maintained, and at the same time the surface appearance of the outer row of links has a substantially unbroken appearance due to the increased surface area of each outer link.

The individual parts of the bracelet chain can be made of noble or base metals or the alloys thereof, or can be made partially of synthetic material.

Two embodiments of an elastic link chain according to the invention are shown diagrammatically in the accompanying drawing in which:

Figure 1 is a plan view of one embodiment of bracelet chain in the unstressed or contracted position,

Figure 2 is a view of the longitudinal side of the bracelet chain shown in Figure 1,

Figure 3 is a section along the line III—III of Figure 1,

Figure 4 is a perspective view of a hollow link of the outer row or layer of the chain with the extended portions projecting from the link wall prior to being bent over,

Figure 5 is the hollow link according to Figure 4 with the extended portions bent over,

Figure 6 is a perspective view of a connecting member,

Figure 7 is a perspective view of a leaf spring,

Figure 8 is a view of the longitudinal side of another embodiment of bracelet chain in the unstressed position,

Figure 9 is a similar view to Figure 8 but in the stressed or expanded condition of the bracelet chain,

Figure 10 is a plan view of the bracelet chain according to Figure 9, and

Figure 11 is a section along the line XI—XI of Figure 8.

The expandable bracelet chain according to the invention, adapted particularly for use with a watch, consists of the hollow links 2 of the outer row or layer and of the hollow links 3 of the inner row, these links being connected together in articulated manner by connecting members 4. In the embodiments shown the connecting members 4, which extend with their arms 16 into the open longitudinal sides 24 of the outer row of links or into the side 25 of the inner row, act on the leaf springs 5 mounted in each link 2 or 3 and thereby stress them, when the bracelet chain is expanded.

The bent leaf springs 5 lie, with their preferably pressed-in angled side 8, on the inner side 18 of the outer link members 2 or on the outer side 19 of the inner link members 3, whereas the upwardly bent ends 7 of the spring shanks are in contact with the arms 16 of the connecting members 4. The outer sides of the outer links 2 and/or the inner sides of the inner links 3 have on their ends extended portions 9 or 10, which are bent over after the connecting members 4 have been mounted in the links 2 and 3, and in this way cover the back parts 20 of the connecting members 4 either completely or partially, and so prevent them falling out of the chain laterally.

Slots 11 (Figure 5) are formed in the side surfaces 17 by the bent-over portions 9, 10 and the backs 20 of the connecting members 4 partially penetrate through these slots when they are deflected owing to the bracelet chain being stretched.

The links 2 of the outer row are wider than the links 3 of the inner row. When the chain is in the contracted position the side surfaces 17 of the outer links 2 are in contact with one another and the outer sides of these links thus form a substantially unbroken or continuous surface, whereas the side surfaces of the narrower hollow links 3 of the inner row have gaps 26 disposed between them even in the contracted position of the chain (Figure 2, 8) so that pinching of skin or hairs will not take place, and the bracelet chain can be bent over particularly easily.

WHAT WE CLAIM IS:

1. Elastic link chain for decorative or utility purposes, particularly for expansion bracelets for holding a watch, consisting of two rows or layers of hollow links disposed in offset relationship to one another in the longitudinal direction of the chain, and of connecting members arranged in pairs at the longitudinal sides of the chain, each of these pairs of connecting members having one arm extending into the open end of a link of one row of links and, the other arm, extending into the adjacent link of the other row, thereby stressing springs mounted in the hollow links when the chain is expanded and wherein the open ends of the hollow links of at least one row of links and the back parts of each two adjacently situated connecting members, whose arms extend in the same link of one row, are covered by an integral extended portion of the link walls of said row, said extended portion being bent over for this purpose.

a gap of very unpleasant appearance between the connecting members in the outer links would have to be accepted with the new embodiment as the outer links are now made wider than the inner links. This disadvantage does not occur however, because portions of the walls of the hollow links of one—preferably the outer—layer of the chain are bent over and these bent-over portions cover the gaps between the members and make them invisible. It is possible to produce the link chains with wide outer links and narrow inner links and at the same time to effect a considerable economy with respect to the chains of known type.

Nevertheless the unbroken surface appearance of the chain is maintained, and at the same time the surface appearance of the outer row of links has a substantially unbroken appearance due to the increased surface area of each outer link.

The individual parts of the bracelet chain can be made of noble or base metals or the alloys thereof, or can be made partially of synthetic material.

Two embodiments of an elastic link chain according to the invention are shown diagrammatically in the accompanying drawing in which:

Figure 1 is a plan view of one embodiment of bracelet chain in the unstressed or contracted position,

Figure 2 is a view of the longitudinal side of the bracelet chain shown in Figure 1,

Figure 3 is a section along the line III—III of Figure 1,

Figure 4 is a perspective view of a hollow link of the outer row or layer of the chain with the extended portions projecting from the link wall prior to being bent over,

Figure 5 is the hollow link according to Figure 4 with the extended portions bent over,

Figure 6 is a perspective view of a connecting member,

Figure 7 is a perspective view of a leaf spring,

Figure 8 is a view of the longitudinal side of another embodiment of bracelet chain in the unstressed position,

Figure 9 is a similar view to Figure 8 but in the stressed or expanded condition of the bracelet chain,

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The bent leaf springs 5 lie, with their preferably pressed-in angled side 8, on the inner side 18 of the outer link members 2 or on the outer side 19 of the inner link members 3, whereas the upwardly bent ends 7 of the spring shanks are in contact with the arms 16 of the connecting members 4. The outer sides of the outer links 2 and/or the inner sides of the inner links 3 have on their ends extended portions 9 or 10, which are bent over after the connecting members 4 have been mounted in the links 2 and 3, and in this way cover the back parts 20 of the connecting members 4 either completely or partially, and so prevent them falling out of the chain laterally.

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The links 2 of the outer row are wider than the links 3 of the inner row. When the chain is in the contracted position the side surfaces 17 of the outer links 2 are in contact with one another and the outer sides of these links thus form a substantially unbroken or continuous surface, whereas the side surfaces of the narrower hollow links 3 of the inner row have gaps 26 disposed between them even in the contracted position of the chain (Figure 2, 8) so that pinching of skin or hairs will not take place, and the bracelet chain can be bent over particularly easily.

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1. Elastic link chain for decorative or utility purposes, particularly for expansion bracelets for holding a watch, consisting of two rows or layers of hollow links disposed in offset relationship to one another in the longitudinal direction of the chain, and of connecting members arranged in pairs at the longitudinal sides of the chain, each of these pairs of connecting members having one arm extending into the open end of a link of one row of links and, the other arm, extending into the adjacent link of the other row, thereby stressing springs mounted in the hollow links when the chain is expanded and wherein the open ends of the hollow links of at least one row of links and the back parts of each two adjacently situated connecting members, whose arms extend in the same link of one row, are covered by an integral extended portion of the link walls of said row, said extended portion being bent over for this purpose.



2. Elastic link chain as claimed in claim 1, wherein the extended portions both of the outer link walls of the outer links as well as of the inner link walls of the inner links, are bent over.

3. Elastic link chain as claimed in claim 1 or 2, wherein the width of the inner links is smaller than that of the outer links, measured in the direction of expansion of the link chain.

4. Elastic link chain substantially as hereinbefore described with reference to Figs. 1 to 7 of the accompanying drawing.

5. Elastic link chain substantially as hereinbefore described with reference to Figs. 8 to 11 of the accompanying drawing.

MARKS & CLERK.

R.A.K.

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