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3,232,040

DEVICE FOR LIMITING ELONGATION OF STRIPLIKE
FLEXIBLE MEMBERS FORMED BY LINKED ELASTIC
ELEMENTS, PARTICULARLY BRACELETS, ETC.

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2 Sheets-Sheet 1

FIG. 1

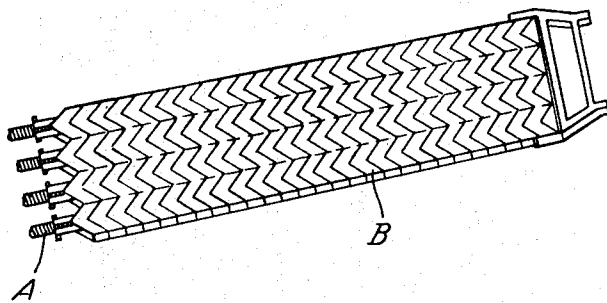


FIG. 2

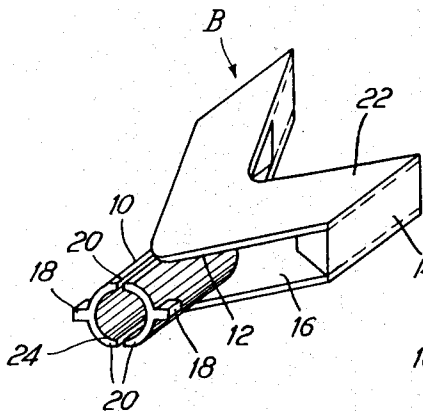


FIG. 3

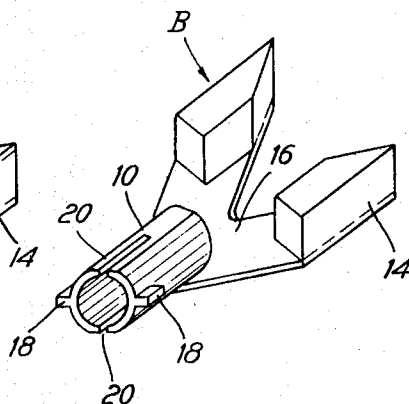
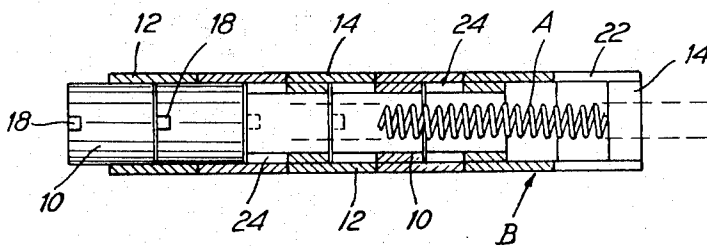


FIG. 4



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2 Sheets-Sheet 2

FIG. 5

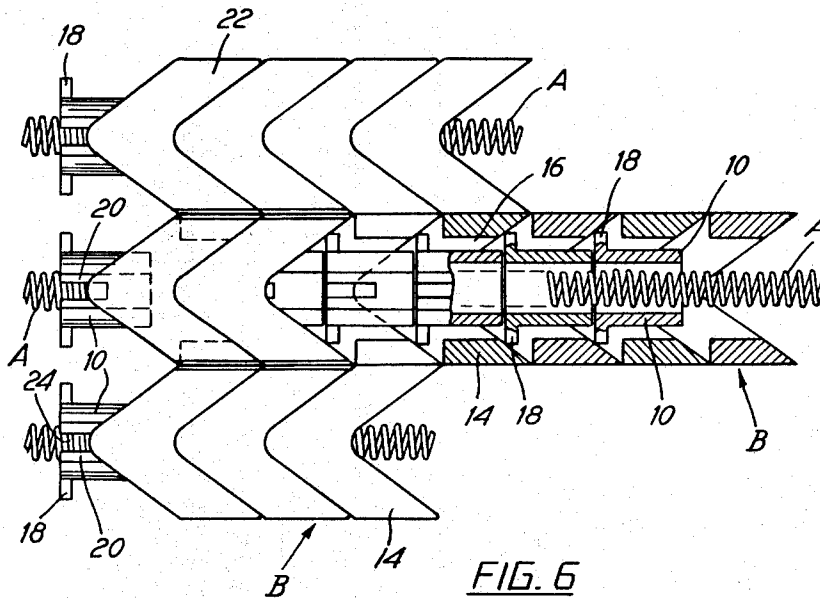


FIG. 6

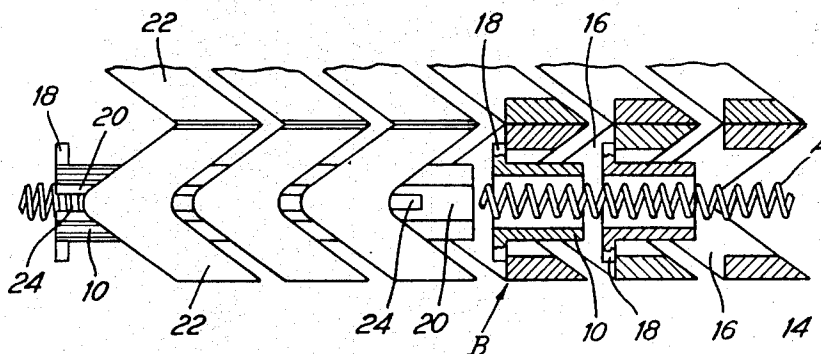
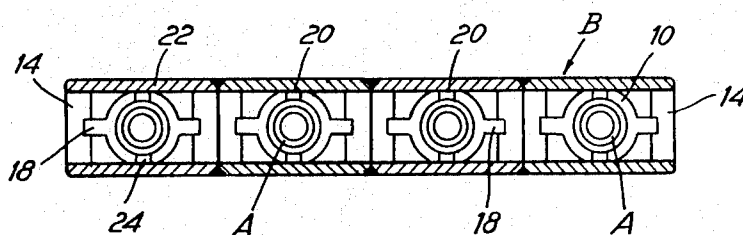


FIG. 7



1

3,232,040
DEVICE FOR LIMITING ELONGATION OF STRIP-LIKE FLEXIBLE MEMBERS FORMED BY LINKED ELASTIC ELEMENTS, PARTICULARLY BRACELETS, ETC.

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4 Claims. (Cl. 59—79)

This invention relates to a device for limiting elongation and deformation of striplike flexible members, such as belts, bracelets, and the like, formed by linked elastic elements.

With particular but not exclusive reference to the manufacture of elastic bracelets, by way of example, for wristwatches, the known bracelets are constituted by a plurality of elements, linked and combined through resilient straps. These bracelets, practically, do not meet the usual requirements and do allow very small movements, while the elastic pressure of the straps is, in certain cases, considerable and is not tolerated by the user of the bracelet.

Furthermore the small elastic deformation of the bracelet, makes uncomfortable the use of the bracelet, causing the rapid deterioration of the springs, whose resiliency is jeopardized and compromised, also for the reason that the spring must be of small dimension.

The present invention has the object to avoid the inconvenience above-mentioned, and other inconveniences, so that the resilient action of the device is of small amount, and so that this action develops along a considerable portion of the flexible member without causing permanent deformations, thus allowing to limit the size of the flexible member obtained.

The device according to the invention is characterized in that, in combination with linked and elastic elements, adapt to realize the flexible member under consideration, it provides two groups of stop members mutually cooperating, one of which is adapted to react against the returning action of the resilient means, while the other group constitutes stops which limit the elongation and the extension of the flexible members.

In an advantageous embodiment of the device, it consists of a succession of tubular elements mutually cooperating, in a row one after the other, at least part of each providing stops and counter-stops, conveniently spaced, which cooperate respectively with the counter-stop and with the stop of the tubular elements, which precede and follow the tubular element under consideration, while in such a row of tubular elements is inserted at least a coil spring, whose respective ends are secured to the end elements of such a row of tubular elements.

In the case that the flexible member is particularly made for forming a bracelet or a belt, the tubular elements provide a transversal section preferably quadrilateral and the adjacent edges of such tubular elements present a mix-linear course, by way of example, zig-zag or herringbone, in order to obtain the desired artistic pattern, while the stops and counter-stops are concealed by the lateral projecting walls formed by said tubular elements.

The realization of the tubular elements could be performed in a more convenient manner relatively to the use of the flexible and deformable member, by way of example, such tubular elements could be realized joining together, by soldering or seam folding, the different parts which constitute the stops and the counter-stops, or, more advantageously, such tubular elements could be realized by press-forming or with metallic sheet, in order to obtain shaped straps which, conveniently folded, form the tubular element presenting, at one of its ends, a longitudinal

2

extension preferably of tubular shape, provided with appropriate stops, cooperating with counter-stops formed by a portion of the end edge of the tubular element subsequent to that under consideration.

Evidently the present protection extends also to the flexible deformable organ, particularly to bracelets, belts and the like, including the device according to the invention.

The invention will be now explained through the following description, which refers to the accompanying drawing, which shows, so to exemplify, some preferred embodiments of the device. In such drawing:

FIGURE 1 shows in perspective view, a portion of a flexible member realized according to the present invention;

FIGURE 2 is the perspective view of one of the elements which form the device;

FIGURE 3 is a view of the element shown in FIGURE 2 with the upper plate removed.

FIGURES 4 and 5 show, in a greater scale, vertical and longitudinal partial sections of such flexible member;

FIGURE 6, like FIGURE 4, shows a section of the flexible member;

FIGURE 7 is the partial transversal section of the bracelet.

Taking into consideration the figures of the drawing, the flexible member under consideration is constituted by a plurality of elements B, positioned successively in a row; in which is inserted a coil spring A, conveniently tensioned and whose ends are secured to the ends of the row or strip, formed by the element B under consideration; joining together one or more strips, a flexible member is obtained in the desired length, which can be varied, varying the number of elementary strips B.

The elements B are linked together in the manner that will be described later and surround the coil spring A, which has the appropriate length, relative to the length of the flexible member under consideration.

Each of the elements B is constituted by a tubular element or sleeve 10, of appropriate length, in which is inserted, as described, the coil spring A. Such sleeve is secured, at one of its ends, to a crown 12, provided at one of the ends of a second tubular element 14, whose inner size is made in such a way that it can slide the sleeve 10 of the element B, adjacent to that under consideration. The tubular element 14 has a prismatic shape and flanking the crown 12, provides openings 16, conveniently sized, in order to house one or two lugs 18 provided in opposite position by the other end of the sleeve 10. The inner edges of the openings 16 serve as tabs to cooperate with the lugs 18. In order to guide these sleeves 10 within the box-like pieces 14 of the elements B following those under consideration, such sleeves provide, in diametrically opposed positions, two guiding plane surfaces 20, apt to engage with the inner surfaces of two of the opposite walls of the box-like pieces 14, thus preventing the mutual rotation of said elements B. As shown in the figures the guiding plane surfaces are the edges of longitudinally extending diametrically opposed slots cut in the tubular element or sleeve 10 and extending from the point or crown 12 of the element B, to the distal end of the sleeve. See for example, FIGURE 2 and the left-most element in FIGURE 3. These slots are spaced 90 degrees from the lugs 18. The elements B are then slipped on the spring A and linked together to form a row or strip of the desired length and such elements are disposed in a row, one after the other, so that the edges of the ends of such pieces, for mutual cooperation, form appropriate stops, apt to maintain in tension the springs A. The linkage of the elements B is realized, engaging the lugs 18 of one of such elements in the openings 16 of the box-like piece 14, subsequent to

3

that under consideration. In effect such linkage is effected in accordance with the novel principles of realization of each element B.

In effect such element can be realized so that one of the walls of the box-like piece 14, by way of example, the wall 22 is folded back and secured by soldering or by seam folding. These elements are mutually successively engaged, as the elements are slipped on the spring A, by inserting into each one of the box-like pieces the slotted end of the sleeve 10 of the element following the one under consideration, so that the lugs 18 of such sleeve accommodate in the openings 16 such box-like pieces. The slots in the sleeve 10, and the resiliency of the metal of which the sleeve is made, allow the sides of the sleeve to yield enough to permit the lugs 18 to slide past the inner sides of the box-like pieces 14 of the next element B and snap into the opening 16.

The row or strip formed by the telescopic elements B comes out as a flexible element, owing to its structure, and is resilient, since on the ends of such strip are fastened the ends of spring A, whose action keeps engaged in a row the box-like pieces 14. On the other hand, when the strip is tensioned, the telescopic elements B slide axially and mutually, but such sliding is restricted by the lugs 18 which are retained by the edges of the side walls of the box-like pieces under consideration.

In considering a variant of realization and assembly of the elements B, such elements, deprived of the lugs 18, are mutually linked, inserting the sleeve 10 of one of them in the box-like piece 14 subsequent to the considered one. The lugs 18 are added thereafter, by application to the end of the sleeve, through the opening 16, or more advantageously, providing such lugs by folding a portion of the edge of the sleeve 10, previously conveniently sheared, the folding being executed after insertion of such sleeve into the box-like piece 14.

It is evident that other embodiments of the device could be foreseen according to the invention, by way of example, the element B could be obtained by blanking in a single piece of a metallic sheet, folding then the sheared element obtained, so to have the box-like piece 14 and the sleeve 10. The lugs 18, in this case, are obtained by providing at the ends one or more wings or fins, constituting the sleeve 10 with extensions that, folded at right angle, form the stop-lugs 18, apt to engage with the bottom wall of the openings 16.

Other modifications and variants can be realized and that, as said, in relation to the use of the device, by way of example, the front ends of the box-like pieces 14 can be conveniently shaped, in order to realize a desired esthetic pattern. It is understood that the present application is extensible to the flexible member, such as bracelet, belts, etc., provided with the device according to the invention.

Such flexible member can be easily realized, taking into consideration the structure of the present device and particularly of the elements B. In fact, in order to realize a flexible member of the desired width, it is enough to join together two or more strips by, for example, silver

4

soldering the adjacent sides of at least some of the laterally adjacent sides of individual elements of the several strips, as shown in FIGURE 1, wherein at least part of the elements B of each strip are fastened together. Or else the elements B could be constituted by box-like pieces 14 of desired width (that is of double, triple width, etc. of the elementary width), and whose wall 12 provides two or more sleeves 10 with the stop-lugs 18. The linkage of these elements of width double, triple than that shown in FIGURE 2, is realized in the way considered above. Evidently the flexible member under consideration could provide a mixed structure formed by elements B of double width, triple etc., conveniently alternated with simple elements, so to satisfy requisite of use or of fashion.

Practically the details of the different embodiments can vary, without departing from the limits of the invention and therefore from the domain of the patent.

I claim:

1. In an expansible chain for a bracelet or the like in which a series of similar tubular elements each interlinked with adjacent elements of the series are threaded on a spring tending to shorten said series of elements, a series of tubular elements each of said tubular elements comprising a first tubular part of generally rectangular cross sections the ends of which are adapted to abut corresponding ends of adjacent elements, an inwardly directed tab in each said tubular element, a yieldable split sleeve fixed in one end of each tubular element and projecting therefrom for insertion into the adjacent tubular element, and an outwardly directed lug on the distal end of the split sleeve adapted with deflection of the sleeve to pass said tab and thereafter to cooperate with said inwardly directed tab to limit separating movement of said tubular elements.

2. In an expansible chain according to claim 1 interengaging means on said split sleeve of one tubular element and the next tubular elements to limit relative rotation of adjacent tubular elements.

3. An expansible chain according to claim 1 in which the abutting ends of the tubular elements have complementary outlines.

4. An expansible chain according to claim 1 comprising a plurality of parallelly arranged series of tubular elements, the tubular elements of one series being secured to corresponding tubular elements of a next adjacent series of elements.

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