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[54] **EXPANSION BRACELET**

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[51] **Int. Cl.** **F16g 13/24**

[58] **Field of Search** ..... 59/79 R; 63/5 R, 11 R; 224/4 B, 4 D, 4 H

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[57] **ABSTRACT**

An expansion bracelet, particularly for wristwatches, has a row of connected links. Each of these links has a plate member, a pair of solid outer members connected to said plate member at opposite lateral sides thereof, as seen with respect to the elongation of the row, and a solid inner member which is located between the outer members and partly projects beyond them in longitudinal direction of the row. The inner member has an underside which faces towards the plate member and is provided with a pair of transversely extending channels. A pair of substantially C-shaped brackets are provided, each having a bight portion pivotably received in one of the channels, and a pair of leg portions. The leg portions of one of the brackets are pivotably connected to the plate member so that this one bracket can be tilted longitudinally of the row out from between the outer members of the link. A pair of biassing springs are provided, each surrounding one of the bight portions. The biassing spring associated with the one bracket permanently opposes the tilting of the latter. The other bracket is connected in the same manner with a plate member of adjacent link, and its associated biassing spring also opposes its tilting.

8 Claims, 4 Drawing Figures

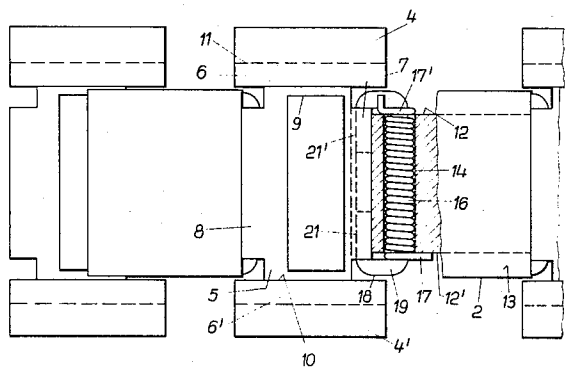


Fig. 1

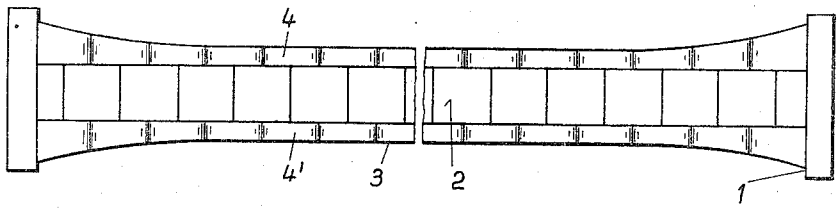
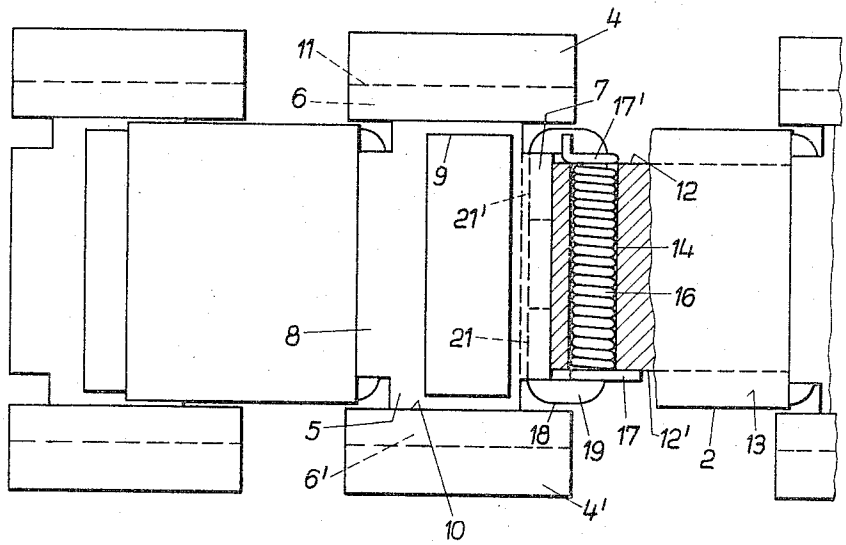


Fig. 2



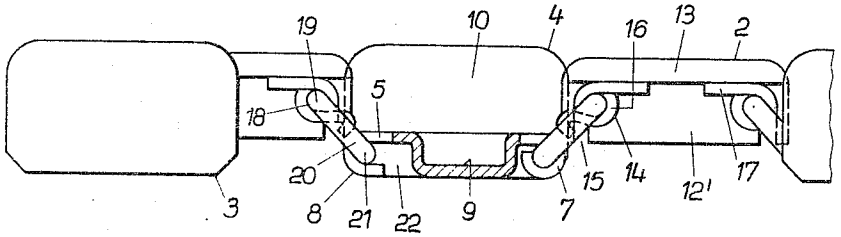


Fig. 3

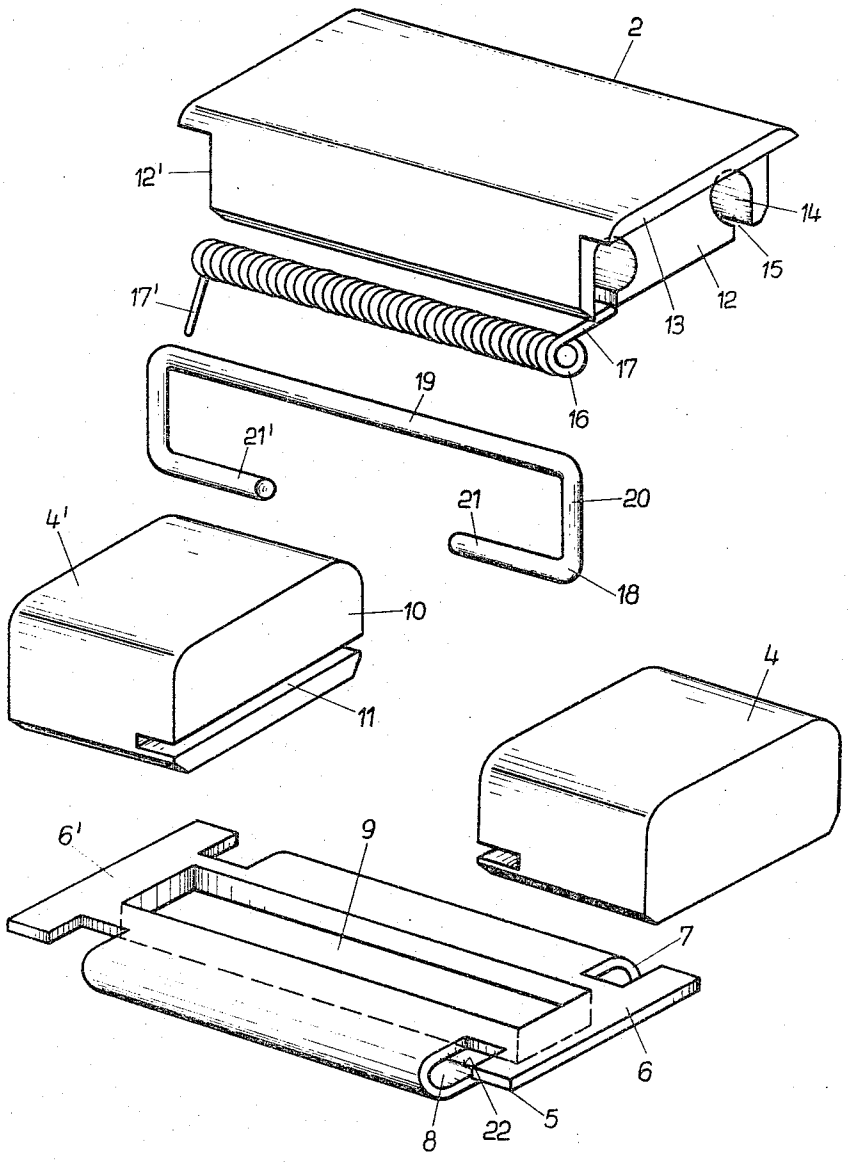


Fig. 4

EXPANSION BRACELET

BACKGROUND OF THE INVENTION

The present invention relates generally to a bracelet, and more particularly to an expansion bracelet, especially for wristwatches.

There has recently been a trend towards rather large and heavy wristwatches, creating a concomitant demand for similarly massive bracelets, that is watch bands for these watches. It has been observed that customers refuse to accept bracelets which are in conventional manner made of formed sheet metal and are hollow, apparently because they are considered to be too light in weight and too fragile. Moreover, particularly in the case of large-dimensioned wristwatches it is desired that the width of the bracelet be continuously varied, that is that the width increases continuously from the center of the bracelet towards the opposite ends thereof which are to be connected with the watch. For reasons of manufacturing economy this is not possible to do in bracelets whose links are hollow and formed of sheet metal.

Having recognized these problems, the industry has for some time now been producing wristwatch bracelets whose links are of solid cross-section, rather than being hollow and formed of sheet metal. These solid cross-section links can of course be shaped to obtain a continuously changing width of the bracelet, and evidently they have the desired heavier and stronger feeling. However, it has not heretofore been possible to make bracelets of this type so that they can be expanded, because the solid cross-section links of the bracelets did not have the interior space which was previously present in the hollow sheet-metal links and wherein the springs were accommodated which make the expansion of these previous bracelets possible. In many instances this absence of the extension feature is felt to be a substantial disadvantage. It is now no longer possible to simply pull the bracelet with the watch onto or off the wrist; instead, a closure is required which engages two ends of the bracelet. Of course, whenever the closure is opened or is closed, there is the danger that the bracelet with the watch may fall to the ground and become damaged. Moreover, in most instances the closures are not so reliable as to assure that they cannot come open accidentally, with a resultant loss of both the watch and the bracelet. Since the length of the bracelet cannot be changed, that is since it cannot become expanded, it has also been observed that if the bracelet is relatively tight and a swelling of the wrist should occur, for instance in hot weather, the bracelet can exert an annoying pressure upon the wrist.

SUMMARY OF THE INVENTION

Accordingly, it is a general object of the present invention to provide an improved bracelet, particularly for wristwatches, which avoids the aforementioned disadvantages.

More particularly, it is an object of the present invention to provide such an improved bracelet which combines the advantages of an expansion bracelet with those of a bracelet composed of solid links.

In keeping with the above objects, and with others which will become apparent hereafter, one feature of the invention resides, in an expansion bracelet, particularly for wristwatches, in a row of connected links each of which comprises a plate member having a pair of

first edge portions extending transversely of the row, and a pair of second edge portions extending longitudinally of the row. A pair of solid outer members are provided, each being connected to one of the second edge portions and being spaced from one another transversely of the row. A solid inner member is located between the outer members and in part project beyond them in direction longitudinally of the row. The inner member has an underside facing towards the plate member and provided with a pair of transversely extending channels. A pair of substantially C-shaped brackets is provided. Each of these has a bight portion which is pivotably received in one of the channels and a pair of leg portions. The leg portions of one of the brackets are pivotably connected to one of the first edge portions of the plate member so that this one bracket can be tilted longitudinally of the row out from between the outer members of the link. A pair of biassing springs are received in the respective channels in engagement with the respective brackets, and the one associated with the one bracket permanently resists the tilting of the same. The other bracket is to be connected with an adjacent link of the row.

A bracelet so constructed is, evidently, an expansion bracelet with all the advantages of the same. On the other hand, it has the desired massive character in that both the outer members and the inner member are of solid cross-section rather than being hollow and formed of sheet metal. Aside from the desired weight and appearance the bracelet can thus be readily configurated in terms of its surface configuration and of a desired variation of its width, for instance a continuous variation of the same.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view of an expansion bracelet according to the present invention, in non-expanded condition;

FIG. 2 is a fragmentary top plan detail view, partly in section, showing a portion of the bracelet in FIG. 1 but in expanded condition;

FIG. 3 is a partly sectioned side elevation of the portion in FIG. 2; and

FIG. 4 is an exploded perspective view, showing the components of a link of the novel bracelet.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The drawing illustrates in FIGS. 1–4 one exemplary embodiment of the invention, shown as a wristwatch expansion bracelet 1. The bracelet 1 comprises a row of connected links which together form a center row of members 2 that is bounded laterally by two outer rows 3 composed of members 4 and 4', respectively.

As FIGS. 2–4 show more clearly, each link of the novel expansion bracelet is composed of one of the solid cross-section inner members 2 and two of the solid cross-section outer members 4,4' which are located at the opposite lateral sides of the respective

member 2. There is further provided a plate member 5 extending transversely of the elongation of the row and having substantially T-shaped lateral edge portions 6,6' (see FIG. 4) and transverse edge portions which extend between the edge portions 6,6'. One of these transverse edge portions is identified with reference numeral 7 and formed to tubular configuration, defining a passage which is open at its opposite ends. The other transverse edge portion is identified with reference numeral 8 and formed to hook-shaped configuration so that the passage which it defines is open not only at its opposite ends but also laterally.

The plate member 5, which is of sheet metal, is formed with one or more (only one shown) profiling 9 which serves as a reinforcement for the plate member 5, i.e., to reinforce it against bending.

The mutually facing edge faces 10 of the members 4,4' are each provided with a slot 11 extending in parallelism with the elongation of the row of links, and the end portions 6,6' of the plate member 5 are each received in one of these slots and rigidly connected therein, for instance by means of press-forming or the like. Thus, the members 4,4' and 5 constitute a unit with one another.

The link further comprises a solid cross-section inner member 2 which in the non-expanded condition of the bracelet (compare FIG. 1) is located halfway between the members 4,4' whereas its other half projects outwardly from between them in the longitudinal direction of the bracelet, being located between corresponding members 4,4' of the next adjacent link. The lateral edge faces 12,12' of each member 2 are partly recessed as indicated in FIG. 4 so that a projection 13 is obtained. Downwardly below the projections 13 the edge faces 12,12' are provided with a pair of bores forming passages 14 which each extend from one of the edge faces to the other. These passages of course extend transversely of the elongation of the bracelet and it will be seen that in direction towards the underside of the member 2, that is the side which faces towards the plate member 5, there are slots 15 provided which communicate with the passages 14 over the entire length of the latter. The slots 15 are laterally offset from the respective central axes of the passages 14.

Each of the passages 14 accommodates a helical spring 16 (only one shown) which is provided at its opposite ends with transversely extending projecting portions 17,17'. The purpose of the slots 15 is to permit the ready insertion of these springs 16 into the respective passages 14, which is accomplished in that the projection 17 or 17' at that end of the spring 16 which is to be the leading end as the spring is inserted, is made to move through the respective slot 15 during such insertion. Each of the passages 14 further coacts with a substantially C-shaped bracket (only one shown in FIG. 4), a bight portion 19 of which extends through the respective passage as well as through the spring 16 therein. The insertion of these brackets, identified with reference numeral 18, is of course again made possible by the presence of the slots 15. Each bracket can freely turn within the respective spring 16. The two leg portions at the opposite ends of the bight portion 19 are located outside the member 2. One part 20 of each leg portion is located in the clearance created between the respective members 4,4' and the member 2, due to the presence of the recess in the end faces 12,12', and another part 21,21' of the respective leg is received in either the passage formed by the edge portion 7 or the passage formed by the edge portion 8. Again, the legs or more particularly the parts 21,21' thereof, are freely pivotable in these respective passages. The parts 20 are protected and concealed from view by the projecting portions 13.

When the components are connected with one another the springs 16 are torsionally stressed, with one of the projections, here the projection 17, abutting the underside of the associated projection 13, and the other projection 17' abutting the associated part 20 of the bracket 18. Thus, the bracket 18 is permanently tilted by the action of the spring 16 to a position inwardly of the link, in which the member 2 is located halfway between the members 4,4', the term halfway here referring to the longitudinal direction of the bracelet. Evidently, when a pull is exerted in longitudinal direction on the bracelet, the spring action is overcome and the member 2 is moved outwardly from between the members 4,4' by tilting of the associated bracket 18 in the corresponding direction, to the position shown in FIGS. 2 and 3. When the pull is subsequently relaxed, the spring will restore the member 2 to its former position.

It goes without saying that the other bracket of each of the members 2 is similarly connected with a plate member 5 of the next adjacent link, as is diagrammatically suggested in FIGS. 2 and 3.

It is desirable that these bracelets be adjustable in their length, to accommodate them to thicker or thinner wrists. According to the present invention this can be readily done by adding or removing individual links. It is merely necessary to move the parts 21,21' of a respective bracket 18 out through the open side 22 of the passage defined by the hook-shaped edge portion of a plate member 5, so that an entire link can be removed or, conversely, can be added.

It will be readily appreciated that the present invention thus avoids the disadvantages which have been outlined with respect to the prior art, while retaining those features thereof which are desirable.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above.

While the invention has been illustrated and described as embodied in a wristwatch expansion bracelet, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended

1. An expansion bracelet, particularly for wristwatches, comprising a row of connected links, each of said links comprising a plate member having a pair of first edge portions extending transversely of said row, and a pair of second edge portions extending longitudi-

nally of said row; a pair of solid outer members each connected to one of said second edge portions and being spaced from one another transversely of said row; a solid inner member located between said outer members and in part projecting beyond them in direction longitudinally of said row, said inner member having an underside facing towards said plate member and provided with a pair of transversely extending channels; a pair of substantially C-shaped brackets, each having a bight portion pivotably received in one of said channels and a pair of leg portions, the leg portions of one of said brackets being pivotably connected to one of said first edge portions of said plate member so that said one bracket can be tilted longitudinally of said row out from between said outer members; and a pair of biasing springs received in the respective channels in engagement with the respective brackets and permanently resisting such tilting thereof.

2. An expansion bracelet as defined in claim **1,** said outer members having respective mutually opposed surfaces each of which is provided with a slot extending longitudinally of said row; and wherein each of said second edge portions is received and rigidly retained in one of said slots.

3. An expansion bracelet as defined in claim **1,** wherein said plate member is of sheet material and formed with at least one reinforcing profile.

4. An expansion bracelet as defined in claim **1,** wherein one of said first edge portions is formed to tubular configuration and defines an open-ended passage, and the other of said first edge portions is formed to hook-shaped configuration and defines a passage which is open at its ends and also intermediate the latter, said leg portions of said one bracket being partly received in one of said passages.

5. An expansion bracelet as defined in claim **4,** wherein said leg portions each include one part which is spaced from and substantially parallels said bight portion and is received in said one passage, and another part which connects said one part and said bight portion and is located between said inner member and a respective one of said outer members.

6. An expansion bracelet as defined in claim **5,** said inner member having a pair of end faces each of which faces one of said outer members, and each of said end faces being partly recessed in direction away from the associated outer member to define with the same a clearance in which the respective other part is located.

7. An expansion bracelet as defined in claim **5,** wherein said biasing springs are helical springs having spaced ends each of which is provided with a projection extending transverse to the elongation of the respective spring, each of said springs surrounding one of said bight portions under torsional prestress with one of its projections engaging said inner member and the other of its projections engaging one of said other parts of the respective bracket.

8. An expansion bracelet as defined in claim **7,** wherein said inner member is formed in said underside with a pair of slits each of which communicates with and extends from end to end of one of said passages.

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