March 18, 1958 K. C. AUGENSTEIN 2,826,900

TERMINAL CONNECTOR FOR EXPANSION BRACELETS

Filed Dec. 18, 1953 2 Sheets-Sheet 1

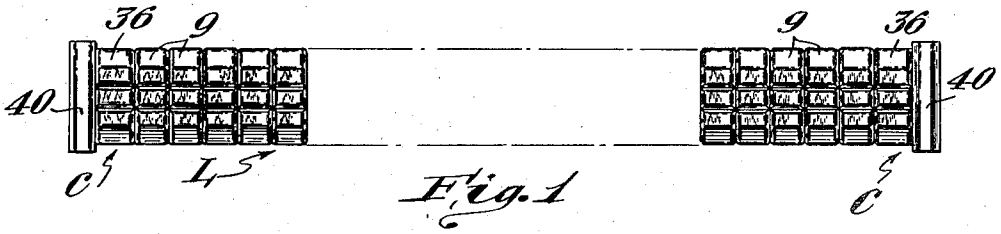

Fig. 1

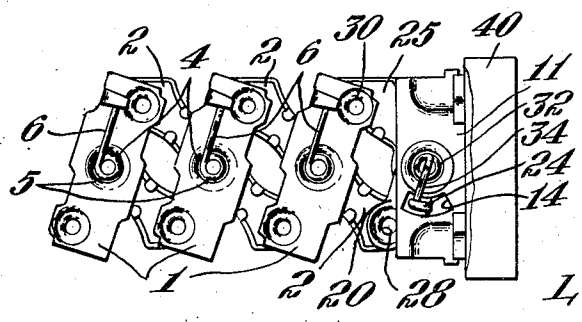

Fig. 3.

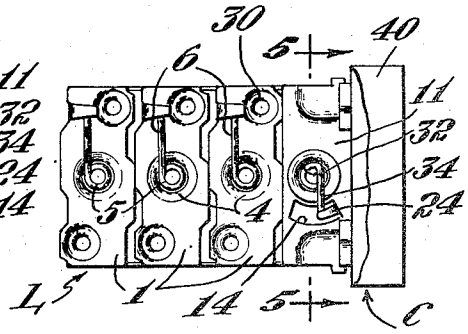

Fig. 2

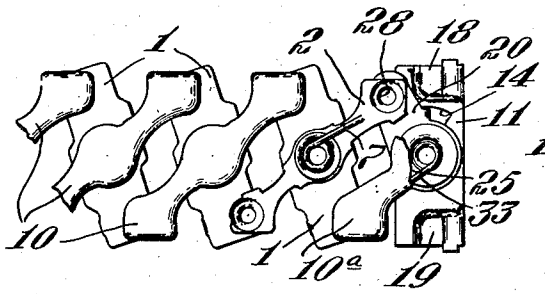

Fig. 4

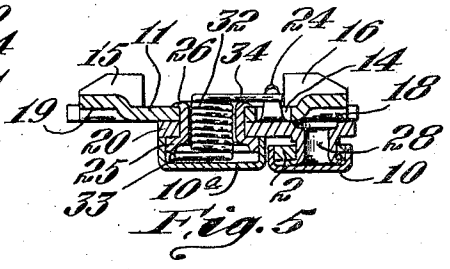

Fig. 5

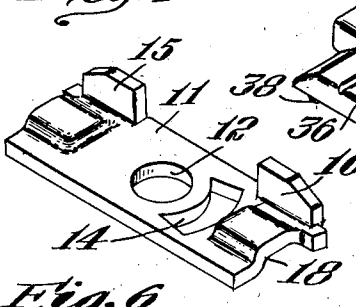

Fig. 6

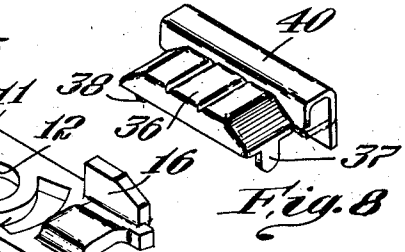

Fig. 8

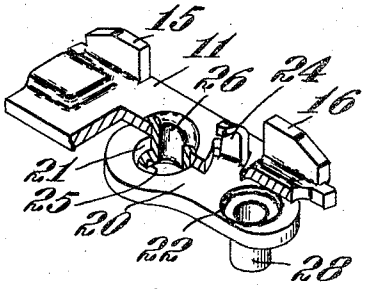

Fig. 9

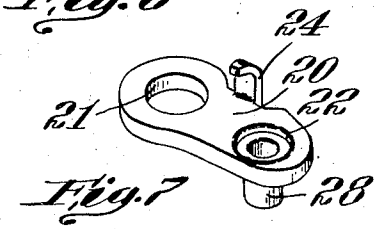

Fig. 7

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TERMINAL CONNECTOR FOR EXPANSION BRACELETS

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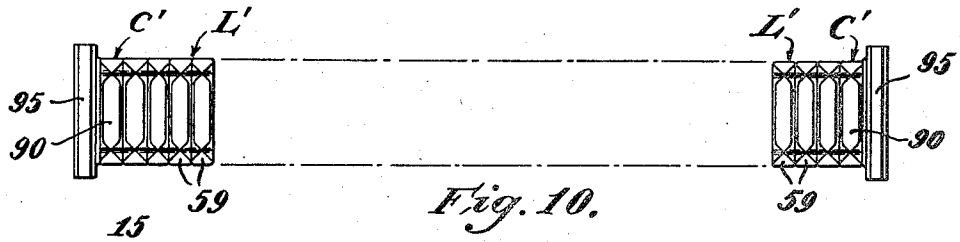

Fig. 10.

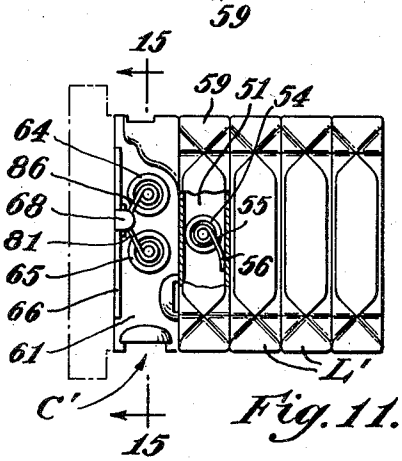

Fig. 11.

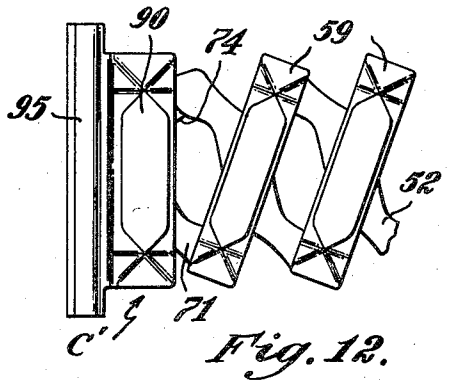

Fig. 12.

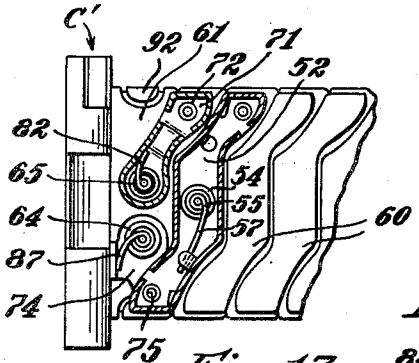

Fig. 13.

Fig. 18.

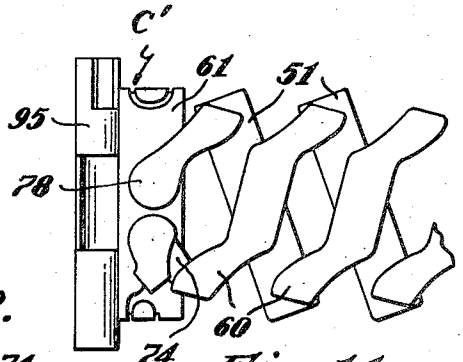

Fig. 14.

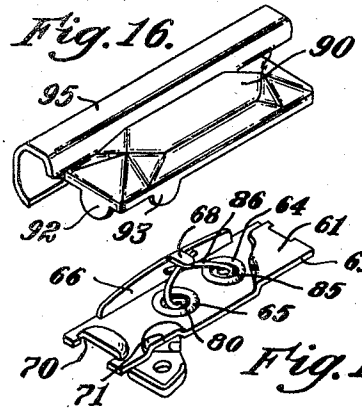

Fig. 17.

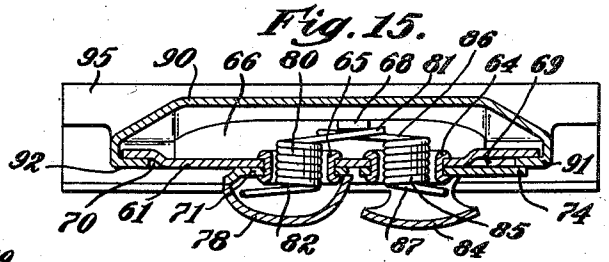

Fig. 15.

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2,826,900

TERMINAL CONNECTOR FOR EXPANSION BRACELETS

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Application December 18, 1953, Serial No. 398,910

13 Claims. (Cl. 63—5)

In an expansion bracelet of the type having interconnected links, it is found that excessive strain falls on the terminal links with the result that breake often occurs at the junction of the terminal links and connector. Moreover, in some constructions the connection between the terminal link and connecting member is such as to resist expansion of the bracelet to its full extent and hence undue strains invariably occur at such connections.

The principal objects of the invention are to overcome the aforementioned objectionable features and to provide a construction which relieves the strain on the end link of a watch band and which permits maximum stretch; to provide an attractive device which not only harmonizes with the design of the bracelet, but also permits the connector to be easily and quickly coupled with a wrist watch or ornamentation; and to provide a device which is of strong, reliable and durable construction and which can be readily assembled in an economical manner.

Further objects will be apparent from a consideration of the following disclosure and the accompanying drawings, wherein:

Fig. 1 is a top plan view of a bracelet having terminal links or connectors constructed in accordance with the present invention;

Fig. 2 is an enlarged top plan view of one end of the bracelet with the ornamental shells of the top links removed, the links being shown in retracted position;

Fig. 3 is a view similar to Fig. 2 showing the links in expanded position;

Fig. 4 is a bottom view with certain of the ornamental shells of the lower links removed or broken away, the links being shown in expanded position;

Fig. 5 is a view taken along the line 5—5 of Fig. 2;

Figs. 6, 7 and 8 are enlarged isometric views showing the constituent elements of the terminal link;

Fig. 9 is an enlarged isometric view partly in section of the parts shown in Figs. 6 and 7 when in assembled relation;

Fig. 10 is a top plan view of an expansion bracelet having terminal links or connectors made in accordance with another embodiment of the present invention;

Fig. 11 is an enlarged top plan view of one end of the bracelet shown in Fig. 10, with parts broken away and shown in section, showing the linkage in retracted position and illustrating the construction of one of the terminal links;

Fig. 12 is a view similar to the view of Fig. 11 but showing the links in expanded position;

Fig. 13 is a bottom plan view corresponding to Fig. 11;

Fig. 14 is a bottom plan view corresponding to Fig. 12;

Fig. 15 is an enlarged section on the line 15—15 of Fig. 11; and

Figs. 16, 17 and 18 are enlarged isometric views of the

parts constituting the terminal link or connector of the bracelet of Fig. 10.

The embodiment of Figs. 1 to 9

The bracelet herein shown in Figs. 1 to 9 for the purpose of illustration comprises a plurality of pairs of cross links L connected with terminal links or connectors C, each pair of cross links comprising a top link 1 and a bottom link 2 formed with central openings to receive a hollow stud or pivot 4. Coil springs 5 are disposed within the hollow studs and are provided with outwardly extending arms 6 and 7 acting on the upper and lower links, respectively, to urge them to and normally maintain them in retracted position (Figs. 1 and 2). Ornamentation shells 9 and 10 fit over the links, as shown in Figs. 1 and 4, and the construction of these cross links may be as shown in my prior Patent 2,515,817, granted July 18, 1950, to which reference may be had, it being understood that the shape or design of the cross links may be varied as desired.

Each of the terminal links or connectors C comprises an elongate transverse member 11 (Fig. 6) formed with a central opening 12 and an arcuate slot 14 concentric with the opening 12. The outer longitudinal edge of the member 11 is formed with spaced upstanding lugs 15 and 16 and the opposite end portions are struck upwardly so as to provide shallow recesses 18 and 19 (Figs. 4 and 5).

A half link 20 (Fig. 7) is formed at opposite ends with openings 21 and 22 and between these openings is an upstanding lug 24 having an inwardly bent tip. The half link 20 underlies one end portion of the member 11 with the lug 24 extending through the slot 14 (see Fig. 9); and a second half link 25 (Figs. 4 and 5) underlies the other end portion of the member 11 and is formed at one end with an integral upstanding hollow stud 26 which projects through the openings 21 and 12 so as to pivotally connect the parts together, as best shown in Fig. 5.

The outer end of the half link 20 is pivotally connected by a stud 28 to the end of the adjacent bottom link 2 (Figs. 3, 4 and 5), the construction and arrangement of parts being such that the half link 20 completely underlies the member 11 when the parts are in fully retracted position, as shown in Figs. 2 and 5. Similarly, the outer end of the second half link 25 is pivotally connected by a stud 30 to the end of the adjacent top link 1 (Figs. 2 and 3). An ornamental shell 10*a* (Fig. 4) fits about the second half link 25 and provides, in effect, a housing about the pivot 26, and a coil spring 32 is disposed within the hollow pivot 26 with one arm 33 acting against the shell 10*a* and its other arm 34 acting against the lug 24, as shown in Figs. 4 and 5, so as to urge the parts to retracted position.

Fitting over the member 11 is an ornamental shell or housing 36 (Fig. 8) embodying the same design as the shells 9 (Fig. 1), the shape of the lugs 15 and 16 being such as to provide a supporting foundation for the shell 36 which cooperates with tabs 37 and 38 integral with the walls of the shell and bent inwardly into the recesses 18 and 19 so as firmly to unite the parts. The outer longitudinal wall of the shell is joined to or integral with an extension or coupling 40 which is initially bent into an inverted J-shape so that its depending leg may either be fitted about the coupling pin of a wrist watch or ornamentation and then bent into a closed sleeve as indicated by the broken lines of Fig. 8, or otherwise shaped to provide a coupling sleeve.

With the construction and arrangement herein shown the terminal link or connector C presents the same appearance as each of the upper links 9, as distinguished

from conventional constructions wherein the terminal link or connector usually presents a strikingly different appearance which tends to detract from the beauty of the bracelet. Moreover, the construction and arrangement of parts insure a smooth and reliable operation overcoming the tendency to develop an unsightly gap between the connector C and links L.

The embodiment of Figs. 10 to 18

The bracelet herein shown in Figs. 10 to 18 for the purpose of illustration comprises a plurality of pairs of cross links L' connected with terminal links or connectors C', each pair of cross links comprising a top link **51** (Fig. 11) and bottom link **52** (Fig. 13), formed with central openings to receive a hollow stud or pivot **54**. A coil spring **55** is disposed within each hollow stud and has outwardly extending arms **56** and **57** acting on the links so as to urge them toward and normally maintain them in retracted position (Figs. 10, 11 and 13). Ornamental shells **59** and **60** fit over the links and the construction of these cross links may be as shown in my prior Patent No. 2,515,817, granted July 18, 1950 to which reference may be had, it being understood that the shape and design of the cross links may be varied as desired.

Each of the terminal links or connectors C' comprises an elongate transverse member **61** (Fig. 17) formed with spaced openings between its ends which receive hollow studs or pivots **64** and **65**. The outer longitudinal edge of the member **61** is formed with an upstanding flange **66** (Figs. 11, 15 and 17) which carries an inwardly directed lug **68**, and the opposite end portions and the inner longitudinal edge of the member **61** are upwardly dished to provide recesses **69**, **70** and **71** (Figs. 15 and 17).

A half link **71** (Figs. 12 and 13) is connected at one end to the pivot **65** and its other end is pivotally connected by a stud **72** to the adjacent end of the top link **51** of the adjacent pair of cross links; and similarly a quarter link **74** (Figs. 12, 15 and 18) is connected at one end to the pivot **64** and its other end is pivotally connected by a stud **75** (Fig. 13) to the end of the adjacent bottom link **52**. The terms "half link" and "quarter link," as herein used, are merely relative so as to distinguish one from the other and are not indicative of the exact length of the respective links.

An ornamental protective shell **78** (Figs. 14 and 15) fits about the under side of the half link **71** and a coil spring **80**, disposed in the hollow pivot **65**, has one arm **81** acting against the flange **66** and its other arm **82** acting against the shell **78** (Figs. 11, 13 and 15) so as to urge the link toward retracted position. The quarter link **74** is provided with an integral extension **84** (Fig. 18) bent through an angle of 180° so as to underlie the pivot **64**, and disposed within the pivot **64** is a coil spring **85** having one arm **86** acting on the flange **66** and its other arm **87** acting on the bend in the extension, as shown in Fig. 15, so as to urge the link toward retracted position. The overhanging lug **68** serves to retain the spring arms **81** and **86** in position, as illustrated in Fig. 17, and the opposite arms **82** and **87** are retained in position by the shell **78** and the bend in extension **84**, respectively.

Fitting over the member **61** is an ornamental shell or housing **90** (Fig. 16) embodying the same design as the shells **59**, the contour of the flange **66** being such as to provide a support for the shell **90** which cooperates with tabs **91**, **92** and **93** which are integral with the walls of the shell and bent inwardly into the recesses **69**, **70** and **71**, respectively, so as firmly to unite the parts. The outer longitudinal wall of the shell is joined to or integral with an extension or coupling **95** which is initially bent into an inverted J-shape so that its depending leg may be fitted about the coupling pin of a wrist watch or ornamentation and bent to closed position, or otherwise shaped to provide a coupling sleeve.

With the construction and arrangement herein shown the terminal link or connector C' not only provides a strong and reliable connection between the cross links L' and coupling **95**, but also presents the same appearance as each of the upper links **59**, as distinguished from conventional constructions wherein the terminal link or connector usually defines the weak point of the linkage and presents a strikingly different appearance which tends to detract from the beauty of the bracelet. Moreover, the construction and arrangement of parts insures a smooth, uniform operation overcoming the tendency to develop an unsightly gap between the connector C' and links L'.

While I have shown and described two desirable embodiments of the invention, it is to be understood that this disclosure is for the purpose of illustration and that various modifications and changes may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

This application is a continuation of applicant's combined applications Nos. 265,970, filed January 11, 1952, now abandoned, and 275,423, filed March 7, 1952, now abandoned, and a continuation-in-part of each of said individual applications.

I claim:

1. In an expansion bracelet of the type having a series of spring biased pivotally interconnected pairs of top and bottom links, a terminal connector comprising a transverse member, said transverse member and at least the top link adjacent thereto extending substantially perpendicular to the longitudinal center line of the bracelet and said transverse member abutting against said adjacent top link when the bracelet is in retracted position, a first lower link having one end pivotally connected to said transverse member and the other end pivotally connected to the adjacent end of said adjacent top link, a second lower link having one end pivotally connected to said transverse member and the other end pivotally connected to the adjacent end of the adjacent bottom link, the center portion of said adjacent bottom link being pivotally interconnected to the center portion of said adjacent top link, said first and second lower links being located under said transverse member and said adjacent top link and being substantially completely invisible from the top of the bracelet when the bracelet is retracted with said transverse member abutting said adjacent top link, and spring means associated with said pivotal connections between said transverse member and said first and second lower links for urging said first and second lower links to retracted position.

2. In an expansion bracelet of the type having a series of spring biased pivotally interconnected pairs of top and bottom links each pair being pivotally interconnected at its center portion and the several pairs being pivotally interconnected to each other at their end portions, and each top link being positioned with its longitudinal axis substantially perpendicular to the longitudinal center line of the bracelet when the same is retracted, a terminal connector comprising a transverse member, a first lower link having one end pivotally connected to the underside of said transverse member and the other end pivotally connected to the adjacent end of the adjacent top link, a second lower link having one end pivotally connected to the underside of said transverse member and the other end pivotally connected to the adjacent end of the adjacent bottom link and spring means associated with said pivotal connections between said transverse member and said first and second lower links for urging said first and second lower links to retracted position.

3. The bracelet of claim 2 wherein when said bracelet is in a retracted position, said transverse member extends substantially perpendicular to the longitudinal center line of the bracelet and abuts said adjacent top link and said first and second lower links are located below said adjacent top link and said transverse member so as to be invisible from the top of the bracelet.

4. The bracelet of claim 2 wherein the second lower link is shorter than said first lower link.

5. In an expansion bracelet of the type having a series of pivotally interconnected pairs of links provided with springs for yieldingly urging said links toward retracted position, a terminal connector comprising a transverse member having a slot between its ends, a half link pivotally connected at one end to said transverse member between said slot and one end thereof and the other end of said half link being pivotally connected to the adjacent end of the first link of an adjacent pair of interconnected links, said half link having a projecting part extending through said slot, means for connecting the adjacent end of the second link of said adjacent pair of interconnected links to said transverse member so that it is free to move in substantially the same manner as the other corresponding links of the bracelet and spring means acting on and abutting against said projecting part so as to swing said half link to retracted position and acting on said connecting means so as to swing said connecting means to retracted position.

6. In an expansion bracelet of the type having a plurality of pairs of cross links, each pair being pivotally interconnected at its center and the several pairs being pivotally connected to each other at their end portions and a spring associated with each pair of cross links urging them to retracted position, a terminal connector comprising a transverse member formed with a slot between its ends, a first half link pivotally connected at one end with said transverse member between said slot and one end thereof and its opposite end pivotally connected with one end of one link of the adjacent pair of cross links, said half link having an upstanding lug projecting through said slot, a second half link pivotally connected at one end with said transverse member and at its opposite end with the end of the other link of said adjacent pair of cross links, and a spring member having one arm acting on said second half link and another arm acting on said projecting lug so as to swing said links and yieldingly maintain them in retracted position.

7. In an expansion bracelet of the type having a plurality of pairs of cross links, each pair being pivotally interconnected at its center and the several pairs being pivotally connected to each other at their end portions and a spring associated with each pair of cross links urging them to retracted position, a terminal connector comprising a transverse member having a central opening and a slot between said opening and one end thereof, a half link pivotally connected at one end with said central opening and at its opposite end with one end of one of the adjacent pair of cross links, said half link having an upstanding lug projecting through said slot, a second half link pivotally connected at one end to said central opening and at its opposite end with the end of the other of said adjacent cross links, and a spring member having one arm acting on said second half link and another arm acting on said projecting lug so as to swing said links and yieldingly maintain them in retracted position.

8. In an expansion bracelet of the type having a plurality of pairs of cross links, each pair being pivotally interconnected at its center and the several pairs being pivotally connected to each other at their end portions and a spring associated with each pair of cross links urging them to retracted position, a terminal connector comprising a transverse member having a central opening and an arcuate slot between said opening and one end thereof, a half link pivotally connected at one end with said central opening by a hollow pivot and at its opposite end with one end of one of the adjacent pair of cross links, said half link having an upstanding lug projecting through said slot, a second half link pivotally connected at one end to said central opening by said hollow pivot and at its opposite end with the end of the other of said adjacent cross links, and a coil spring disposed within said hollow pivot with one arm acting on said second half link and the other arm acting on said projecting lug so as to swing said links and yieldingly maintain them in retracted position.

9. In an expansion bracelet of the type including a top link and a bottom link pivotally interconnected at their centers and having a spring at the pivotal connection associated with each of said links and urging them to retracted position, a transverse member, said transverse member and said top link being in substantially the same horizontal plane, a first half link having one end pivotally connected to the underside of said transverse member substantially intermediate the ends thereof and its opposite end pivotally connected to the top side of the adjacent end of the bottom link, a second half link having one end pivotally connected to the underside of said transverse member at said pivotal connection between the first half link and the transverse member and its opposite end pivotally connected to the underside of the adjacent end of the top link, said second half link and said bottom link being located in substantially the same horizontal plane, an ornamental shell over the top of the transverse member, an ornamental shell over the top of the top link, an ornamental shell over the bottom of the second half link and an ornamental shell over the bottom of the bottom link, whereby the upper surface of the ornamental shells on the transverse member and the top link are in substantially the same horizontal plane, and lower surfaces of the ornamental shells on the second half link and the bottom link are in substantially the same horizontal plane.

10. In an expansion bracelet of the type having a series of pivotally interconnected pairs of cross links each pair being pivotally interconnected at its center portion and the several pairs being pivotally interconnected to each other at their end portions, one link of each pair being positioned with its longitudinal axis substantially perpendicular to the longitudinal center line of the bracelet when the same is retracted, spring means associated with said pairs of cross links for yieldingly urging said links toward retracted position, a terminal connector comprising a transverse member having spaced pivots between its ends, a half link having one end pivotally connected to one of said pivots and the other end pivotally connected to the adjacent end of one of said cross links which are substantially perpendicular to the longitudinal center line of said bracelet when the same is retracted and which comprise the pair of cross links adjacent to said transverse member, a quarter link having one end connected to the other of said pivots and the other end pivotally connected to the adjacent end of the other cross link of said adjacent pair of cross links, said half link and said quarter link when said bracelet is contracted being located under said transverse member and said one adjacent link which is substantially perpendicular to the center line of the bracelet when it is contracted, and spring means associated with said pivots of said transverse member for urging the half and quarter links respectively to retracted position.

11. In an expansion bracelet of the type having a series of pivotally interconnected pairs of cross links each pair being pivotally interconnected at its center portion and the several pairs being pivotally interconnected to each other at their end portions, one link of each pair being positioned with its longitudinal axis substantially perpendicular to the longitudinal center line of the bracelet when the same is retracted, said links being provided with springs for yieldingly urging said links toward retracted position, a terminal connector comprising an elongate transverse member having spaced pivots between its ends and an upstanding flange at its outer longitudinal edge, a half link pivotally connected at one end to one of said pivots and the other end of said half link being pivotally connected to the adjacent end of one

of said cross links which are substantially perpendicular to the longitudinal center line of said bracelet when the same is retracted and which comprise the pair of links adjacent to said transverse member, a quarter link which is shorter than said half link connected at one end to the other of said pivots and the other end of said quarter link being pivotally connected to the adjacent end of the other cross link of said adjacent pair of cross links, and springs associated with said pivots of the transverse member, each spring having an arm acting against said upstanding flange and a second arm acting against its associated link for urging it to retracted position.

12. In an expansion bracelet of the type having a series of pivotally interconnected pairs of cross links, each pair being pivotally interconnected at its center portion and the several pairs being pivotally connected to each other at their end portions, one link of each pair being positioned with its longitudinal axis substantially perpendicular to the longitudinal center line of the bracelet when the same is retracted, said links being provided with springs for yieldingly urging said links toward retracted position, a terminal connector comprising a transverse member having spaced pivots between its ends, a half link pivotally connected at one end to one of said pivots and the outer end of said half link being pivotally connected to the adjacent end of one of said cross links which are substantially perpendicular to the longitudinal center line of said bracelet when the same is retracted and which comprise the pair of links adjacent to said transverse member, a quarter link connected at one end to the other of said pivots and the other end of said quarter link being pivotally connected to the adjacent end of the other cross link of said adjacent pair of cross links, said quarter link being shorter than said half link, a protective shell carried by and coextensive with said half link, said quarter link having an integral extension bent at an angle of about 180° so as to provide a protective cover for its pivotal connection with said transverse member, and spring means associated with said pivots of the transverse member for urging the half and quarter links to retracted positions.

13. In an expansion bracelet of the type having a series of pivotally interconnected pairs of spring biased cross links wherein one of the links of each of said pairs extends substantially perpendicular to the longitudinal center line of the bracelet and across the entire width of the bracelet when the bracelet is contracted, a terminal connector comprising a transverse member which extends substantially perpendicular to the longitudinal center line of the bracelet when the bracelet is contracted, and having spaced pivots between its ends, a half link pivotally connected at one end to one of said pivots and at the other end to one end of the adjacent perpendicular cross link of the adjacent pair of cross links, a quarter link, which is shorter than said half link connected at one end to the other of said pivots and at the other end to the adjacent end of the other link of said adjacent pair of cross links, and spring means associated with said pivots of the transverse member for urging the half and quarter links to retracted positions, said half link and quarter link being substantially invisible from the top of said bracelet, when said bracelet is contracted.

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