United States Patent [19]

D'Angelo et al.

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[54] **SEPARABLE FASTENER**

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[52] **U.S. Cl.** ..... **24/201 BN**

[51] **Int. Cl.**[2] **A44B 17/00**

[58] **Field of Search** ..... 24/201 BN, 201 S, 201 R, 24/201 A, 252 B, 231, 236

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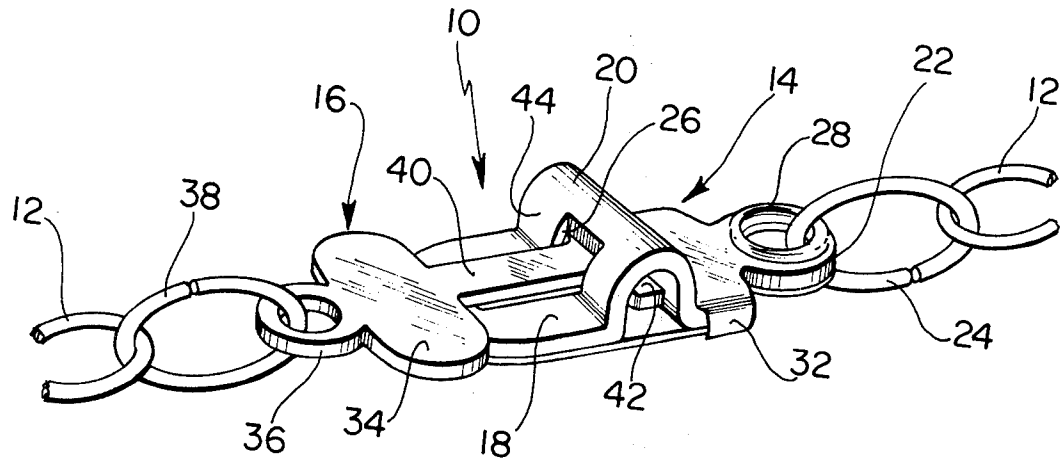
Primary Examiner—Donald A. Griffin

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[57] **ABSTRACT**

A separable fastener for releasably connecting spaced ends of a flexible member, such as a neck chain, comprising a first, substantially flat member having a lateral undulation with an elongate cutout extending into said undulation and with a flat leaf spring secured to the undersurface of said member, and a second key-like member having a transverse bar at its extremity, said bar being adapted to be forced through said cutout against the action of the leaf spring and then manipulatable so as to position said transverse bar within said undulation to interconnect said first and second members.

9 Claims, 7 Drawing Figures



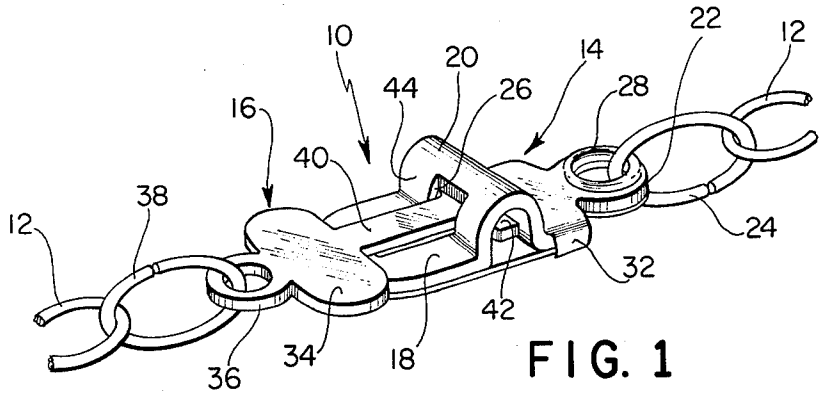


FIG. 1

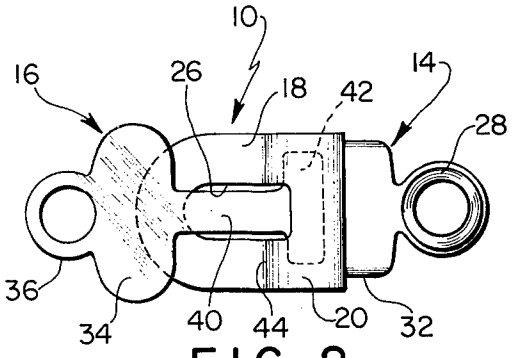


FIG. 2

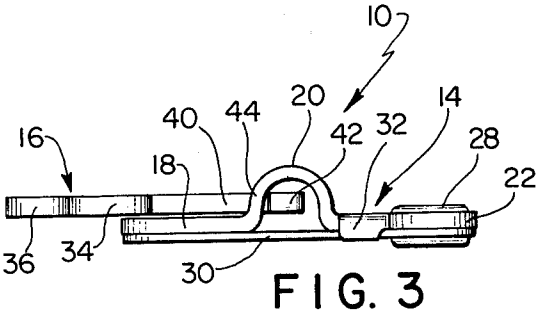


FIG. 3

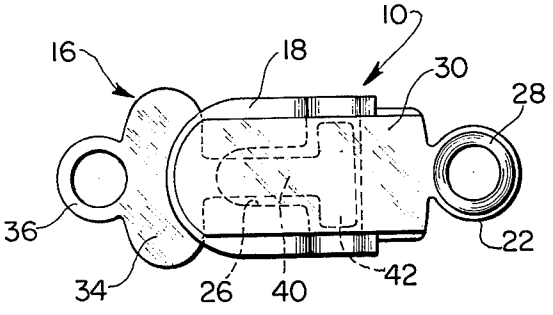


FIG. 4

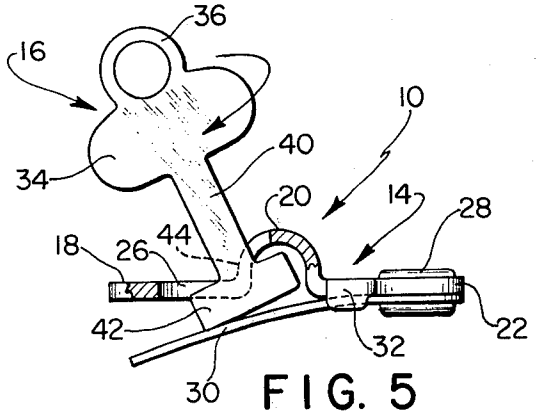


FIG. 5

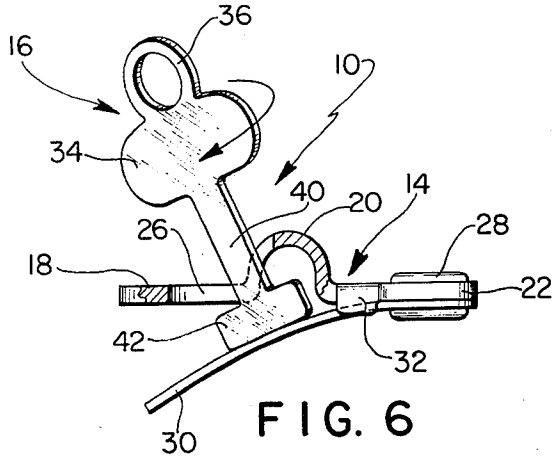


FIG. 6

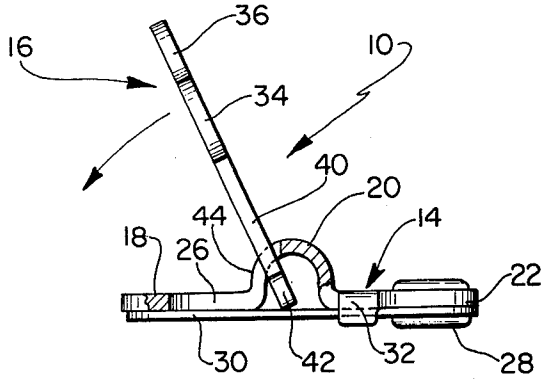


FIG. 7

SEPARABLE FASTENER

BACKGROUND AND SUMMARY OF THE INVENTION

Where it is desired to releasably interconnect spaced ends of a flexible member, such as link chain used for necklaces and the like, it is necessary that the fastening means be of small size so as not to aesthetically detract from the appearance of the article, particularly where the article has a cosmetic significance, such as an article of jewelry; and it is further necessary that the fastener be easily manipulatable, both to open and close, by touch or feel, since necklaces are frequently opened or closed by the wearer with the fastener located behind the wearer's neck. In addition, the fastener must be so constructed as not to become inadvertently opened so as to result in undesirable disconnection of the chain or other flexible member. The present invention is designed to achieve all of these objectives; and while primarily adaptable for use in connection with articles of jewelry, it is obviously not limited thereto; but rather the fastener of the present invention may be used in any environment where it is desired to releasably connect spaced ends of a flexible member.

In the jewelry industry, the most common separable fastener heretofore used is the so-called "spring ring" comprising a ring-like member having a spring loaded jaw normally urged to closed position but manually openable against the action of the spring when it is desired to interconnect the end link of a chain to the ring. Due, however, to recent material shortages and increases in material prices, the conventional spring rings have not only become extremely expensive, but also have become in short supply. Another problem with the conventional spring ring is that manufacturing equipment for automatically producing and assembling such spring rings is both sophisticated and expensive.

It is therefore an object of the present invention to provide a separable fastener which may form an adequate substitute for the conventional spring ring and which lends itself to automatic and economically feasible manufacture.

Another object is the provision of a separable fastener that may be effectively made of relatively small size so as not to aesthetically detract from the article with which it is associated, particularly where such article is a jewelry product.

Another object is the provision of a separable fastener that is easily opened and closed by touch or feel, whereby the fastener may effectively be manipulated by the user while the fastener is located behind the user's neck.

Still another object is the provision of a separable fastener of the character described wherein a secure connection is achieved when the fastener is in its closed or connected condition, thus rendering it virtually impossible for the fastener to become inadvertently separated during use.

Other objects, features and advantages of the present invention will become apparent as the description thereof proceeds when considered in connection with the accompanying illustrative drawings.

DESCRIPTION OF THE DRAWINGS

In the drawings which illustrate the best mode presently contemplated for carrying out the present invention:

FIG. **1** is a perspective view showing the fastener of the present invention in its connected or operative position;

FIG. **2** is a top plan view of the connected fastener;

FIG. **3** is a side elevational view thereof;

FIG. **4** is a bottom plan view thereof; and

FIGS. **5** through **7** sequentially illustrate the manipulatable steps employed when connecting the two parts of the fastener.

DESCRIPTION OF THE INVENTION

Referring now to the drawings, and more particularly to FIG. **1**, there is shown generally at **10** a separable fastener adapted to be used to releasably interconnect spaced ends of a flexible member, such as link chain **12**, which may be a necklace chain, although obviously not limited thereto. The fastener **10** comprises two separate elements, namely, a first body member **14** and a second key-like member **16.**

The body member **14,** which is preferably a sheet metal stamping, such as of brass or the like, comprises an elongate body portion **18** having a lateral undulation **20** extending thereacross. An integral eye **22** is formed in said body to receive the end link **24** of chain **12.** An elongate cutout **26** is blanked in the body **18,** it being noted that said cutout begins at substantially the top of undulation **20** and then extends longitudinally along body **18,** terminating short of the end of said body opposite from eye **22.** Secured to the underside of body **18,** as by rivet **28** in eye **22,** is an elongated, flat leaf spring **30,** it being noted that said spring has a width slightly less than the width of body **18** and a length just slightly less than the length of body **18,** whereby said spring completely underlies cutout **26** and also covers the major open portion of undulation **20.** In order to maintain spring **30** in proper alignment with body **18,** a pair of downwardly extending integral lugs or ears **32** are provided on body **18,** said lugs extending downwardly beyond opposite sides of spring **30** to prevent rotation thereof.

The key-like member **16** is also a flat metal stamping, preferably of brass, and comprises an enlarged portion **34** having eye **36** integrally extending therefrom for receiving the end link **38** of chain **12.** Extending from enlarged portion **34** is an elongate shank **40** having a transverse bar **42** at its extremity. It is to be noted that the width of shank **40** is slightly less than the width of cutout **26,** and it is to be further noted that the transverse length of bar **42** is substantially greater than the width of cutout **26.** Also of dimensional importance is the fact that the transverse length of bar **42** is less than the length of cutout **26.**

In operation and use, it will be understood that end link **24** is first secured to eye **22** so as to connect one end of the flexible chain **12** to the body member **14,** while the opposite end link **38** of chain **12** is likewise connected to eye **36** of key-like member **16.** In order to interconnect the members **14** and **16,** the key-like member **16** is twisted, as illustrated in FIG. **5,** so that the bar **42** may be forced through cutout **26** against the action of spring **30,** it being noted that this is possible because the length of bar **42** is less than the length of

cutout **26,** and the thickness of the member **16** is significantly less than the width of said cutout. After the member **16** has been inserted as illustrated in FIG. **5,** it is then twisted, as illustrated in FIG. **6,** until the bar **42** extends transversely of the member **14,** this being possible because of the fact that the width of shank **40** is less than the width of cutout **26.** The member **16** is then manipulated so that the bar **42** is positioned within undulation **20,** as illustrated in FIG. **7,** and then is swung downwardly until it lies flat along the topside of member **14,** as illustrated in FIG. **3.** In this position, the members **14** and **16** are securely fastened to each other, since the bar **42** is captured within undulation **40** and is maintained therein by spring **30.** Thus, it is virtually impossible for the members **14** and **16** to become accidentally detached, since detachment or separation can be accomplished only by reversing the specific sequential procedure illustrated in FIGS. **5** through **7.** Any pull or tension on chain **12** will not have a tendency to open the fastener **10,** because said pull or tension will simply result in increased bearing between bar **42** and the wall **44** of undulation **20.** Expressed differently, any pull or tension on chain **12** will be effectively resisted by the interconnection of bar **42** within undulation **20.** However, when desired, the members **14** and **16** may be easily separated by reversing the sequential procedure illustrated in FIGS. **5** through **7,** which detachment or separation may be effectively effected by touch or feel whereby it may be accomplished with the fastener located behind the wearer' s neck.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and rearrangements of the parts may be made without departing from the spirit and scope of the underlying inventive concept and that the same is not limited to the particular forms herein shown and described except insofar as indicated by the scope of the appended claims.

What is claimed is:

1. A separable fastener adapted to releasably interconnect spaced ends of a flexible chain or the like, comprising a first, elongate body member having means at one end thereof for receiving one end of said flexible chain, a laterally extending undulation in said body member adjacent said one end, there being a central cutout extending from substantially the top of said undulation and then along said body member toward the other end thereof, a leaf spring secured to the underside of said body member adjacent said one end and extending substantially beyond said undulation, said fastener further comprising a second elongate flat member, means at one end thereof for receiving another end of a flexible chain, said second member having adjacent its other end a flat shank the width of which is slightly less than the width of said cutout, and a laterally extending bar at the end of said shank with the length of said bar being greater than the width of said cutout but less than the length of same, whereby said second member may be releasably connected with said first member by twisting said shank and bar so that the bar extends lengthwise of said cutout whereby it may be forced through said cutout against the action of said spring, and then manipulating said bar so that it lies laterally within said undulation with said shank extending outwardly through said cutout and overlying said other end of said first member.

2. In the fastener of claim **1,** said spring extending for substantially the length of said first member.

3. In the fastener of claim **2,** said cutout terminating just short of said other end of said first member.

4. In the fastener of claim **3,** the length of said cutout being just slightly greater than the length of said bar.

5. In the fastener of claim **2,** said spring being substantially wider than said cutout.

6. In the fastener of claim **1,** said receiving means at said one end of said first member comprising an eye having a rivet secured therein, said rivet securing said leaf spring to said first body member.

7. In the fastener of claim **6,** said first body member having integral ears extending downwardly from opposite sides thereof to prevent rotation of said spring relative to said first body member.

8. In the fastener of claim **1,** said second member having an enlarged portion adjacent said one end thereof, said second member having the general configuration of a key.

9. In the fastener of claim **8,** said receiving means in said second member comprising an eye therein.

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