

[54] JEWELRY CLASP

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[58] Field of Search..... **24/211, 115, 230, 24/73**

[56]

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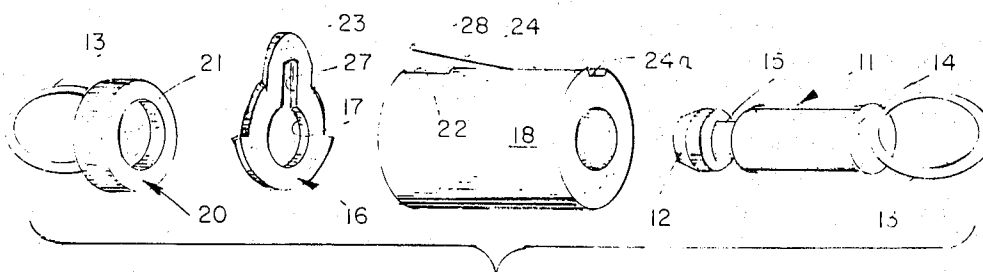
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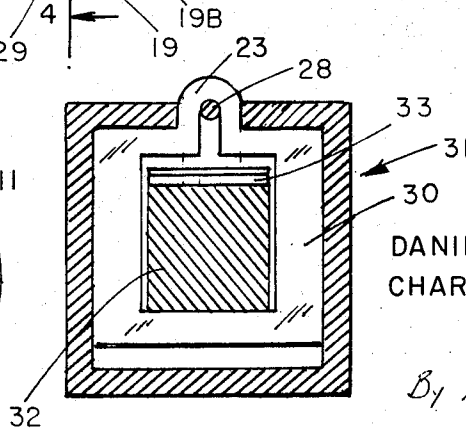
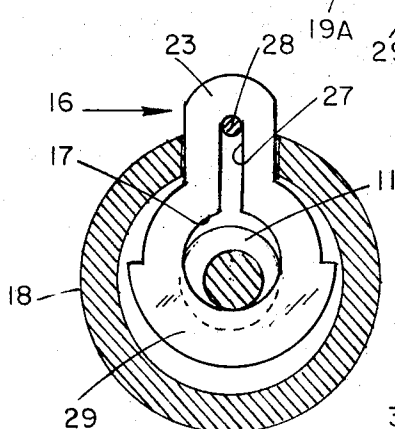
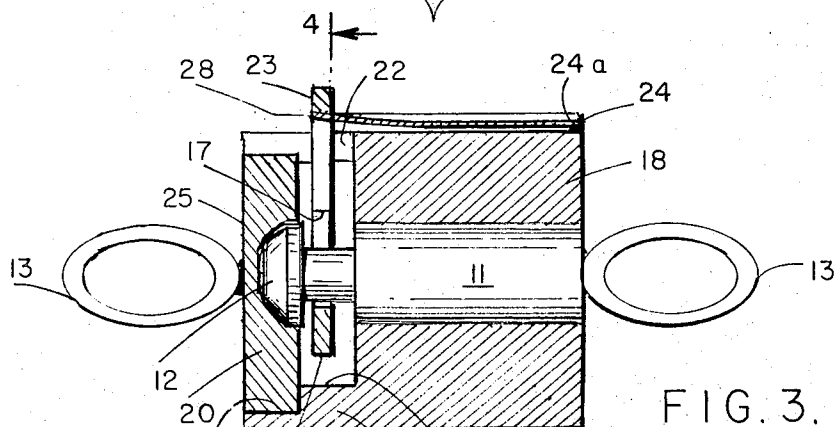
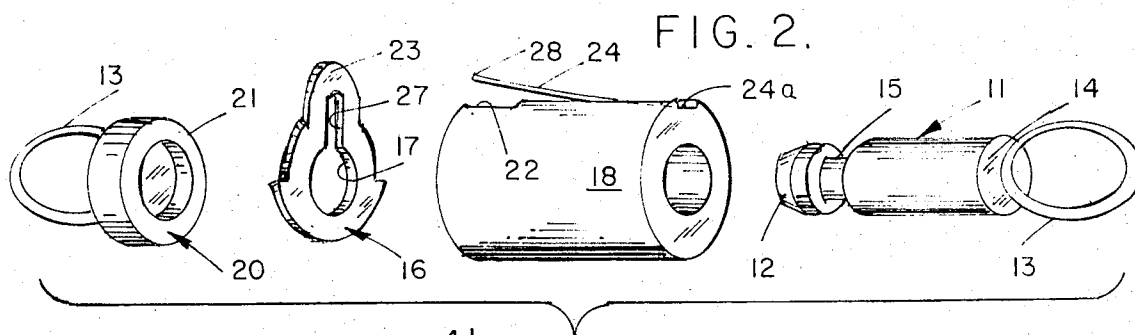
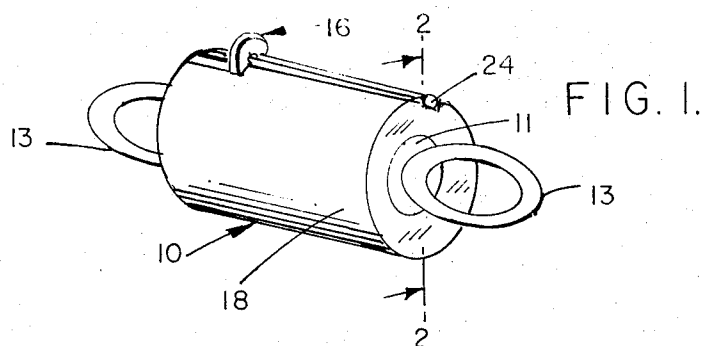
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ABSTRACT

A jewelry clasp is formed of a female member and a complementary male member adapted to cooperate with a lock located within the body of the female member. The lock is engaged through the intermediary of an externally mounted spring.

10 Claims, 5 Drawing Figures





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JEWELRY CLASP

CROSS-REFERENCES TO RELATED APPLICATIONS

This is a continuation-in-part of our copending U. S. Pat. application, Ser. No. 875,861, filed on Nov. 12, 1969, now U.S. Pat. No. 3,611,513.

BACKGROUND OF THE INVENTION

This invention relates to jewelry clasps, and more particularly to locking jewelry clasps for use in securing necklaces, bracelets, watchbands and the like.

Of the several types of jewelry clasps currently in use to secure necklaces, none is entirely satisfactory. The small size and fragile construction of these clasps render them difficult to manufacture and operate. The durability of these clasps is limited for similar reasons.

A popular jewelry clasp, which is currently used to secure necklaces provides an example. This clasp requires the wearer to pull back a sliding lever and then position a loop over a small opening. The entire operation must be carried out by the wearer without looking at the clasp which is usually worn behind the neck. This device is also difficult to manufacture, as is well known in the industry. The longevity of the device is dependent upon the bending capacity of a very small thin wall tubing. The device is further dependent on the reliability of an extremely fine coiled spring which operates in a curved guide rather than a straight line. Unlocking this clasp involves the same kind of unwieldy, behind the head manipulation. A tiny metal edge must be located, pulled in the proper direction, and finally a small loop must be unhooked.

Another type of clasp which is currently in use compels the wearer to manipulate a sharp pin into a narrow groove and then locate a small pivoting lock. This device is also difficult to manufacture.

The use of these clasps is somewhat time consuming, often irritating and may result in improper closure of the clasp and subsequent loss or damage to the necklace.

BRIEF SUMMARY OF THE INVENTION

The above-stated disadvantages and drawbacks are obviated by the present invention. It is an object of the present invention to provide an improved jewelry clasp incorporating simplified means for positively locking said clasp.

Another object of the invention is to provide an improved jewelry clasp as aforesaid wherein the operation of the locking mechanism may be carried out easily and rapidly.

A still further object of the invention is to provide an improved jewelry clasp of simplified construction which may be manufactured easily and economically.

An additional object of the invention is to provide an improved jewelry clasp which is not easily damaged and which is reliable in operation at all times.

Briefly, the jewelry clasp of the invention comprises a female member and a complementary male member. The male member is adapted to cooperate with a lock which is located within the female member. The lock is engaged through the intermediary of an externally mounted spring which applies constant pressure to the lock, thereby, retaining it in the closed position.

In one embodiment of the invention the male member has a tapered head which acts as a locator for posi-

tioning the member in the lock's central aperture. In this embodiment the lock or latch is formed of a flat metal stamping and has a central aperture. The male member has a groove located behind the tapered head, which groove receives the lock. The lock is held in position by a leaf spring member which is mounted in cantilevered fashion on the external surface of the female member and which engages the lock across a slot in the upper section of the lock, thus, exerting a constant upward pressure on the male member. The clasp is operated by moving the male member axially towards the lock. The tapered end of the male member pulls the lock down against the pressure of the spring. When the groove, located directly behind the tapered head reaches the lock location, the spring pulls the lock up into the groove and the locking action is complete.

To unlock the clasp, the spring is pressed downward disengaging the lock and the male member is pulled axially away from the lock.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other objects, advantages and features of our invention will become apparent from the following description and accompanying drawings wherein similar components or parts have been given like characters through the several views, in which:

FIG. 1 is a perspective view of a cylindrical jewelry clasp in the locked position;

FIG. 2 is an exploded perspective view of the jewelry clasp shown in FIG. 1;

FIG. 3 is a longitudinal section taken on the line 2—2 in FIG. 1;

FIG. 4 is a section taken on the line 4—4 of FIG. 3; and

FIG. 5 is a cross-section of a modified embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, there is illustrated, in FIG. 1, a jewelry clasp embodying the invention. The clasp is shown in the locked position. The jewelry clasp may be made of any suitable material such as metal or plastic and comprises a female member 10 and a cooperating male member 11. The male and female members are preferably manufactured in a cylindrical rod-like shape as illustrated in FIGS. 1—3; however, they may be fabricated in any regular or irregular cross-sectional design, i.e., square, triangular, hexagonal, parabolic, etc. It is also possible to make a female member with a different external geometrical configuration from that of the male member. For example, a female member might have a cylindrical or rod-like external shape, while being adapted internally to receive a male member having a triangular cross-section.

As shown in FIG. 2, the male member 11 is an elongate rod or plunger having a beveled nose 12 at one end, and bearing a ring 13 or other similar attachment means for a necklace or watchband on the exterior end surface 14 opposite the beveled nose. Directly behind beveled nose 12 is an annular groove 15 which is adapted to receive locking member or latch 16. Although male member 11 is illustrated as having a beveled nose 12, any camming shape which would serve to guide the male member into the central aperture 17 of locking member 16 may be used. Thus, the nose may be bullet-shaped, or tapered to a point.

The female member 10 is comprised of a stepped or counter-bored main body 18 bearing an end collar portion 19, as shown in FIG. 3, and a partially hollow plug 20 closed at one end and open at the other, the plug having shoulder 21 adapted for insertion into the collar portion 19, as illustrated in FIG. 3. The collar portion 19 is counter-bored into portions 19A and 19B respectively and is provided with an upper notch or cut-out 22, which accepts the upper portion or tab 23 of locking member or latch 16, and positions it to receive a leaf spring 24, the latter having a generally circular cross-section. The plug 20 also has a ring 13 attached to its exterior end face 25. The ring may be permanently affixed to the face as by soldering.

Locking member 16 has a central aperture 17, and is formed of a flat metal stamping or a molded plastic. The thickness of locking member 16 is such that it will seat comparatively easily in groove 15. Central aperture 17 has a diameter which is slightly larger than that of male member 11. The upper portion or tab 23 of locking member 16 protrudes through notch 22 and has a slot 27 which communicates with central aperture 17 and serves to freely receive the free end 28 of leaf spring 24 such that said free end 28 and locking member 16 are mutually connectively associated with one another in generally sliding relation. The central aperture 17 is formed to a shape which admits the male member.

As illustrated in FIG. 3, the locking member 16 is disposed between the plug 20 and main body 18, and is thus actuable by the leaf spring 24. The locking member 16 includes a lower tab 29 which engages the interior of the counter-bored portion 19B of the collar 19, and serves to hold the locking member 16 in proper alignment when the lock is opened. FIG. 4 illustrates how the beveled nose 12 of male member 11 serves to guide the male member through the central aperture 17 of locking member 16, when male member 11 is moved slidably forward towards the plug 20.

In operation, male member 11 is inserted into main body 18 and moved slidably forward towards the plug 20, to lock the clasp. Beveled nose 12 on male member 11 guides it through central aperture 17 of locking member 16 and acts as a cam against the inner peripheral surface of the central aperture 17 of the locking member temporarily displacing it to permit the complete insertion of the male member 11 such that the nose 12 seats in the open end or recess of the plug 20. When groove 15 reaches the proper position in alignment with the locking member 11, leaf spring 24 pulls the locking member into the groove, and the clasp is positively locked. To unlock the clasp, the upper tab 23 of locking member 16 is pressed down toward the surface of the female member 10 disengaging the locking member from the groove, 15, and the plunger is pulled slidably out and away from the plug 20.

The leaf spring 24 is preferably connectively orientated relative to the female member 10 so as to tend to bend away from the latter and apply constant pressure or uplift to locking member 16, thereby, providing positive locking action and its full biasing pressure thereof which is an essential feature of this invention. The leaf spring 24 may be mounted in a recessed axially extending groove 24a as in FIGS. 2-3 and secured in position preferably at the right-most end portion of the body 18 in FIG. 3, such as by any suitable mounting means well known in the art, such that the free end 28 thereof ex-

tends in cantilevered fashion above the cut-out 22 yet remains in the recess 24a. The spring 24 should be fashioned of a material such as spring steel or resilient plastic in order to provide reliable service. If the spring 24 were to tend to bend toward the female member 10, the external surface of the latter would interfere with or obstruct the extent of biasing pressure that may be exerted against the locking member 16 and possibly reduce the effectiveness of the latter.

The jewelry clasp is assembled by inserting the plug 20 into main body 18 with locking member 16 disposed between them such that upper tab 23 is seated in notch 22, and slot 27 can receive the free end 28 of the leaf spring 24. The female member may be held together by a pressure fit between the collar portion 19 and plug 20, whose respective diameters are predetermined accordingly. Various other means may be used to join the female portions of the clasp either permanently or in a detachable fashion. For example, a small amount of an adhesive, or a solder and flux combination could be applied to shoulder 21 to achieve a permanent union of the female member.

FIG. 5 is a modified form of jewelry clasp embodying the features of this invention. The clasp is of similar construction to the clasp shown in FIGS. 1-4. In this embodiment of the invention locking member 30, female member 31 and male member 32, all are made with a square cross-sectional configuration. The use of this design necessitates a specific, but nonetheless, axial alignment for insertion of the male member. This is true when any design having an irregular cross-section is used; however, for certain applications this condition may be desirable. This modification employs a square nose 33 on male member 32, and the lock groove is adapted accordingly.

Numerous alterations of the structure herein disclosed will suggest themselves to those skilled in the art. However, it is to be understood that the present disclosure relates to a preferred embodiment of the invention which is for purposes of illustration only and is not to be construed as a limitation of the invention.

What is claimed is:

1. A jewelry clasp comprising a female member and a male member operatively insertable into said female member, said female member including a hollow body having opposite first and second open ends, said hollow body including first, second and third hollow portions in communication with each other, said second portion being disposed between said first and third portions, said second portion being provided with a greater internal diameter than said first portion, said third portion being provided with a greater internal diameter than said second portion, said first portion being disposed at said first open end into which said male member is insertable, said third portion being disposed at said second open end, a plug secured in said third portion to close said second open end, said plug corresponding in size to said internal diameter of said third portion to define a shoulder and collar relationship respectfully therebetween for preventing movement of said plug into said second portion of smaller internal diameter, an open cut-out in said female member extending from said second open end into said second portion for radially communicating internal and external portions of said hollow body with one another, said female member further including a latch movably retained in said second portion and partially protruding through said

cut-out and outwardly of said female member, and spring means for biasing said latch against said male member for detachably locking said male member in said female member.

2. A jewelry clasp as claimed in claim 1, wherein said spring means includes a cantilevered arrangement.

3. A jewelry clasp as claimed in claim 1, wherein said male member includes a camming end portion and an annular groove extending adjacent said camming end portion, said latch including an apertured portion through which said camming end portion is movable and with which the latter is operatively associated for displacing said latch in a direction opposite that which said spring means biases said latch, said annular groove being movable into alignment with said apertured portion for detachably locking said male member in said female member.

4. A jewelry clasp as claimed in claim 3, wherein said plug includes a recessed portion axially communicating internally with said first portion of said hollow body for receiving said camming end portion of said male member and permitting alignment of said annular groove with said apertured portion of said latch.

5. A jewelry clasp as claimed in claim 4, wherein said spring means includes a cantilevered portion operatively associated with said latch externally of said female member, said cantilevered portion extending longitudinally with and into said cut-out in said second

portion.

6. A jewelry clasp as claimed in claim 5, wherein said latch includes an end tab projecting through said cut-out, said end tab having an opening communicating with said apertured portion and transversely through which opening said cantilevered portion projects.

7. A jewelry clasp as claimed in claim 5, wherein said latch includes upper and lower portions engageable with said second portion internally of the latter for limiting the extent of movement associated with said latch from locking and unlocking positions respectively.

8. A jewelry clasp as claimed in claim 2, wherein said cantilevered spring means and said latch include respective means operatively associated with one another for connective sliding displacement relative to one another in a direction generally transversely of the direction said spring means urges said latch.

9. A jewelry clasp as claimed in claim 2, wherein said cantilevered spring means is connectively oriented relative to said female member so as to tend to bend unobstructively away from said female member and impart to said latch substantially the entire biasing pressure of said spring means.

10. A jewelry clasp as claimed in claim 9, wherein said female member is provided with an external groove in which said spring means is connected and partially confined longitudinally.

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