MAGNETIC JEWELRY CLASP THAT IS ATTACHABLE AND DETACHABLE TO EXISTING JEWELRY BY THE USER

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ABSTRACT

Described herein are embodiments of fasteners that provide a secure, elegant attachment for jewelry that are easily interchangeable between jewelry. For example, in one embodiment, a magnetic jewelry fastener is provided having two magnets secured respectively in two separate detachable housings. In another embodiment, individual clasps are rigidly connected to each of the housings, the clasps each having a displaceable member.
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BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present disclosure relates to jewelry fasteners and, more particularly, to interchangeable magnetic jewelry fasteners.

[0003] 2. Description of the Related Art

[0004] Jewelry fasteners are used to connect portions of jewelry together for functional and aesthetic purposes. Spring rings, for example, are used to connect two ends of a single piece together to form a bracelet, necklace, or anklet. The spring ring can also be used to connect a charm, or other fob, to a bracelet, necklace, or anklet. The spring ring includes a portion that opens when a small lever is pushed backwards, causing the lever to slide along a circular ring. Once the portion of the ring is open, rings or loops may be inserted into the spring ring through the open portion. Upon releasing the lever, the lever slides back along the circular ring to close the portion that was opened, thus enclosing the ring or loop that was inserted within the circular spring ring. The spring ring can provide some security when the lever is in the original position and the ring is intact. However, the ring can easily be bent or twisted, and the lever may not return properly causing an opening in the ring, through which the attached portion may slip.

[0005] Spring rings and many other clasps are attached to jewelry by the use of either a jump ring or a split ring. A jump ring is a metal wire that is formed into the shape of a ring and soldered to preserve the integrity of the ring. A split ring is a metal wire that is formed into the shape of a tight coil similar to that used for car key chains. Jump rings and split rings are jewelry findings that are used to attach various portions of jewelry together. For example, a first jump ring is used to connect a spring ring to a first end of the jewelry, and a second jump ring is connected to the second end of the jewelry. During attachment of the two ends of the jewelry, the second jump ring is inserted into the opening of the spring ring when the lever is used to open the spring ring. A tag may also be used to connect the second end of the jewelry to the spring ring. A tag is a flat piece of metal or plastic that has two apertures, one of which is connected to the second jump ring and the other which may be advanced over the spring ring when the spring is open to secure the two ends of the jewelry together. The spring ring, jump rings, and tags form a linking chain, often consisting of four rings or more, from one end of the jewelry to the other.

[0006] The cumbersome connection created by linking the spring ring with jump rings and/or tags can be unsightly when the jewelry appears different than the fasteners. This is especially true in the case of necklaces, when the fasteners often slip from the back of the wearer's neck to the front of the neck or chest.

[0007] Spring rings can also be very difficult to operate. The spring rings include a lever that must be slid by a finger or fingernail along a length of the spring ring. Unfortunately, the spring rings are manufactured to be very small in order to conceal their unsightly appearance, which also reduces the size of the lever that is actuated. In order to actuate the lever, a person must take the spring ring in one hand and leverage one end of the spring ring against one finger while depressing the lever with the fingernail or finger (often the thumb). This can be a difficult process when the person attempting to actuate the spring ring has large fingers or when the person has manicured fingernails that can be ruined by the process. Furthermore, the space that is opened by depressing the lever is often very small, making it even more difficult to slip the jump ring, split ring, or tag therethrough to be attached.

[0008] Lobster claw clasps are also used to connect two ends of jewelry together in a similar fashion to that of the spring rings. Lobster claw clasps include an attachment portion with a rotatable member. The clasps also include a small lever that is biased in one direction, which, when pressed and rotated downward, causes the rotatable member to rotate inward, thus exposing a portion of the attachment portion through which rings or loops may be inserted. Upon release of the lever, the rotatable member rotates back to the biased position. With the lever in the biased position, the rings or loops are enclosed in the attachment portion.

[0009] Lobster claw clasps have many of the same issues as spring rings. For example, lobster claw clasps are also used with jump rings to permanently fix the lobster claw clasp to the jewelry. A jump ring is also often placed on the opposite end of the jewelry to provide a ring large enough for the lobster claw to grasp. While the lobster claw clasps are constructed to look somewhat nicer than the spring rings, the lobster claw clasps still use jump rings and can be unsightly when they fall to the front of the neck or chest. Additionally, while lobster claw clasps can be somewhat easier to operate than the spring ring clasps, the lobster claw clasps still include a very small lever that is pressed to open the clasp. Similar to the spring rings, a person must take the lobster claw clasp in one hand and leverage one end of the clasp against one finger while depressing the lever with the fingernail or finger. This can be problematic when an individual with large fingers or manicured nails attempts to open the clasp.

[0010] Box clasps are also used to attach ends of jewelry. Box clasps are two-piece clasps in which a first piece is inserted within an aperture or slot of the second piece. The first piece includes a biased portion that locks the first piece in the second piece until the biased portion is pressed. Upon pressing the biased portion, the first piece is unlocked from the second piece, and the first piece can be withdrawn from the second piece. Box clasps also include a safety guard that is rotated into place following the insertion of the first piece into the second piece. The safety guard is used to further secure the locked position of the first piece with respect to the second piece.

[0011] Toggle clasps are also two-piece clasps that can be used on opposite ends of jewelry. The first piece is formed into a circle or other shape with an open center, and the second piece is formed as a thick bar. The second piece is connected to the jewelry in a middle portion such that when the bar is inserted through the open center of the first piece and rotated to sit across the open center, the bar is prevented from slipping through the open center and acts to reduce the likelihood that the two ends of the jewelry will become disconnected.

[0012] These other clasps have further shortcomings. Box clasps can easily be disengaged inadvertently, and the box clasps can be difficult to operate when there is a safety guard. Toggle clasps do not provide sufficient security, as the bar can accidentally slip through the open center, causing the clasps to be disengaged and the jewelry to inadvertently fall.
Other clasps, such as magnetic clasps, which are held together by a magnetic connection, can be inadvertently disengaged and utilize jump rings to connect to the jewelry. Some magnetic clasps use other clasps and jump rings to connect to the jewelry, creating a significant strand of interlinking rings and clasps to connect the jewelry. These long strands can be complicated, insecure, and unsightly.

SUMMARY OF THE INVENTION

[0013] While there are several types of fasteners for connecting portions of jewelry, each of the above-described fasteners fail to provide an interchangeable, secure, and elegant fastener that is easy to use. Disclosed herein are embodiments of fasteners that provide a secure, elegant attachment for jewelry and that are easily interchangeable between jewelry without the use of jump rings or other clasps.

[0014] In some embodiments, a magnetic jewelry fastener is provided having two magnets secured respectively in two separate detachable housings. In another embodiment, individual clasps are rigidly connected to each of the housings, the clasps each having a retractable, rotatable, or otherwise displaceable member. In one embodiment, the magnetic jewelry fasteners can be removed by grasping each of the individual clasps and twisting the clasps in opposite directions to disengage the magnetic housing from each other.

[0015] In further embodiments, a magnetic jewelry fastener is provided having a magnetic coupling portion that has at least one member attached thereto that permits direct coupling with at least one end of a jewelry piece.

[0016] In some embodiments, an interchangeable magnetic jewelry fastener is provided having a housing with an interior portion and a magnet disposed therein and a clasp member rigidly attached to the housing. The clasp member further having a disengageable portion that can be manually actuated.

[0017] In some embodiments, the magnet is proximate a coupling surface of the housing. In further embodiments, the magnet can comprise at least one of neodymium and samarium cobalt. The clasp can also be configured to create a discontinuity in the clasp when the disengageable portion is actuated or the clasp can be rotatable about a longitudinal axis that is transverse to a surface of the housing. In some embodiments, the clasp has a greater cross-sectional dimension than the housing.

[0018] In some embodiments, a magnetic jewelry fastener is provided, the fastener comprising a first housing that is configured to house at least a portion of a first magnet. The first housing further comprises a first coupling surface that has a protrusion extending from the surface. The fastener also comprises a first clasp having a continuous portion. The first clasp is preferably rigidly coupled to the first housing and has an actuable member that, when actuated, creates a discontinuity in the continuous portion. A second housing is also provided, which is configured to house at least a portion of a second magnet. The second housing further comprises a second coupling surface that has a portion configured to receive the protrusion of the first coupling surface when the first coupling surface is coupled with the second coupling surface. The fastener also comprises a second clasp that has a continuous portion. The second clasp is preferably rigidly coupled to the second housing and has an actuable member that, when actuated, creates a discontinuity in the continuous portion.

[0019] In some embodiments, at least one of the first and second clasps is rotatable about a longitudinal axis that is transverse to a surface of the housing. The axis can be generally normal to the surface in some embodiments. Additionally, in some embodiments, a cross-sectional dimension of the clasps is at least as large as a cross-sectional dimension of the housings. Lastly, the protrusion can be annular or another shape.

[0020] In some embodiments, an interchangeable magnetic jewelry fastener is provided including first and second housings. Each of the first and second housings have first and second magnets, and the first and second housings are further configured to be coupled at a location of the housings proximate the magnets. The fastener preferably also comprises first and second clasps, each rigidly coupled respectively to the first and second housings and configured to extend in substantially opposite directions when the first and second housings are coupled.

[0021] In some embodiments, the first and second clasps can be rotatable about a longitudinal axis that is transverse to a surface of the housing, and the clasps can have a cross-sectional dimension that is at least as large as a cross-sectional dimension of the housings. Some embodiments further comprise means for aligning the housings such that the first and second clasps are aligned in a preferred orientation when the housings are coupled. The clasps also comprise a continuous portion that has an actuable member that creates, when actuated, a discontinuity in the continuous portion.

[0022] The above Summary is provided for the purpose of providing a brief summary of several of the disclosed embodiments. However, this Summary is not intended to be a recitation of all the embodiments disclosed herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] These and other features, aspects, and advantages of the present disclosure will now be described with reference to the drawings of embodiments, which embodiments are intended to illustrate and not to limit the disclosure.

[0024] FIG. 1 illustrates a perspective view of a magnetic jewelry fastener in accordance with embodiments disclosed herein.

[0025] FIG. 2 is a top view of the embodiment of the magnetic jewelry fastener illustrated in FIG. 1.

[0026] FIG. 3 is a top view of the embodiment of the magnetic jewelry fastener illustrated in FIG. 1 showing actuable portions of the fastener.

[0027] FIG. 4 is a side view of the embodiment of the magnetic jewelry fastener illustrated in FIG. 1.

[0028] FIG. 5 is a side view of the embodiment of the magnetic jewelry fastener illustrated in FIG. 1 showing two portions of the fastener disengaged.

[0029] FIGS. 6 and 7 illustrate top views of the disengaged fastener illustrated in FIG. 5.

[0030] FIG. 8 illustrates a cross-sectional view of a housing of the magnetic jewelry fastener taken along lines 8-8 of FIG. 1.

DETAILED DESCRIPTION OF EMBODIMENTS

[0031] FIG. 1 illustrates one embodiment of an interchangeable magnetic jewelry fastener 20 in accordance with principles of the disclosure discussed herein. The jewelry fastener 20 resolves several of the shortcomings of other
jewelry fasteners. For example, the jewelry fastener 20 provides an interchangeable link for coupling two ends of jewelry. The jewelry fastener 20 can easily be connected to both ends of a piece of jewelry in order to provide a fastener while using the jewelry. The same fastener 20 can later be disconnected from the first jewelry piece and connected to a second jewelry piece in order to couple two ends of the second jewelry piece together. Additionally, the jewelry fastener 20 provides a secure attachment of the two ends of the jewelry and alleviates concern by the wearer of lost or damaged jewelry due to an insecure fastener. The jewelry fastener 20 is simple to use when attaching the fastener 20 to the two ends of the jewelry piece and in connecting the fastener 20 together. The fastener 20, as described herein, also provides an elegant jewelry piece that can be worn concealed or exposed. These and many other advantages are described further and are apparent in the detailed description provided below.

[0032] FIG. 1 illustrates one embodiment of an interchangeable magnetic jewelry fastener 20 that preferably comprises two portions 22a, 22b that are magnetically coupled to constitute a housing 22. As used herein, the term housing is intended to be used in its ordinary sense and is used to refer at least to either or both of the two portions 22a, 22b. Each portion 22a, 22b of the fastener 20 is preferably coupled to a respective arm 24a, 24b extending from each portion 22a, 22b. Each arm 24a, 24b preferably includes a clasp 26 that is used to connect to one end of a jewelry piece. As depicted in FIG. 1, the clasp 26 can comprise an elongated member that is configured to form an arcuate shape defining an eyelet or aperture 28. The clasp 26 also preferably includes a displaceable portion 30 that can be rotated or retracted to expose a discontinuity 31 in the arcuately-shaped clasp 26. The discontinuity 31 defines a location where the body of the clasp 26 can be separated to attachably receive an end of a jewelry piece.

[0033] The housing 22 can comprise two portions 22a, 22b, which in the embodiment of FIG. 1 each comprise a hemisphere. Each portion 22a, 22b includes a magnet that is attracted to a magnet contained in the other of the two portions 22a, 22b. The magnets used in connection with the fastener 20 are preferably neodymium iron or samarium cobalt, although other ferrite magnets can also be used. In yet further embodiments, magnets other than ferrite magnets can also be used. The magnets are preferably inserted into the portions 22a, 22b such that the polarities are reversed, thus drawing the magnets together and creating a magnetic coupling when the portions 22a, 22b are coupled to constitute the housing 22.

[0034] While the housing 22 is depicted as comprising a sphere when coupled together, it will be readily apparent to one of ordinary skill in the art that the housing can comprise any number of shapes, sizes, or designs. For example, when the interchangeable magnetic jewelry fastener 20 is attached to a string of pearls, it may be advantageous for the housing 22 to comprise a shape, size, and color that is consistent with the pearls that are contained on the string. It may also be advantageous for the color, size, or shape to stand out from the jewelry piece such as would be the case if the jewelry fastener 20 were used with a necklace and the fastener 20 operated as a pendant or accent piece of the necklace. Accordingly, the housing 22 can comprise other shapes, such as cubes, ovoids, cylinders, irregular, and so forth. Additionally, the portions 22a, 22b of the housing 22 can have substantially identical configurations, such as that depicted in hemispherical configuration illustrated in FIG. 1, or the portions 22a, 22b can have dissimilar configurations. For example, for one embodiment, the one of the portions 22a, 22b can have a hemispherical configuration and the other of the portions 22a, 22b can have a semi-cylindrical configuration.

[0035] FIG. 2 illustrates a top view of the fastener 20. In some embodiments, the arms 24a, 24b are rotatable with respect to the housing 22. For example, the arms 24a, 24b can be coupled to the portions 22a, 22b of the housing 22 by a rivet or pin that permits rotation of the respective arm 24a, 24b about an axis 32. In some embodiments, the axis 32 is oriented such that it forms a perpendicular angle with respect to a housing surface 34. In some embodiments, the axis 32 is oriented such that it forms an angle less than or greater than 90° with respect to the housing surface 34. For example, in some embodiments, the axis 32 forms an angle with respect to the housing surface 34 between about 60° and about 120°. In yet further embodiments, the arms 24a, 24b are connected to the housing 22 such that the arms 24a, 24b are not rotatable with respect to the housing 22. For example, the arms 22 can be soldered to each respective portion 22a, 22b of the housing 22 or constructed as a unitary piece with the portions 22a, 22b.

[0036] The arms 24a, 24b are preferably rigidly connected to, attached to, or coupled to the portions 22a, 22b such that the arms 24a, 24b are not displaceable outside the axis 32. As used herein, the term rigid is intended to be used in its ordinary sense; meaning, without limitation, that the connection between the arms 24a, 24b and the portions 22a, 22b generally lacks flexibility. For example, in some embodiments, the connection between the arms 24a, 24b and the portions 22a, 22b of the housing 22 prevents bending of the arms 24a, 24b outside of the axis 32. Thus, the arms 24a, 24b can be rigidly connected to or coupled to the portions 22a, 22b and still permit rotational movement of the arms 24a, 24b about the axis 32 or axial displacement of the arms 24a, 24b with respect to the portions 22a, 22b. In yet further embodiments, for example when the arms 24a, 24b are soldered to the portions 22a, 22b or when the arms 24a, 24b are manufactured as unitary pieces with the portions 22a, 22b, the arms 24a, 24b are rigidly connected to the portions 22a, 22b and additionally limits rotation of the arms 24a, 24b about the axis 32 or limits axial displacement of the arms 24a, 24b with respect to the portions 22a, 22b.

[0037] As described above, and illustrated in the embodiment depicted in FIG. 2, the clasp 26 comprises an arcuately-shaped member that defines an eyelet or aperture 28. In some embodiments, the clasp 26 can comprise other shapes. For example, the clasp can comprise triangular, square, rectangular, pentagonal, hexagonal octagonal, decagonal, irregular, or other shapes. It may be advantageous for the clasp 26 to comprise a shape that corresponds to the jewelry piece to which the clasp is attached. For example, if the jewelry piece is a necklace comprising several triangular pieces, it may be advantageous for the clasp 26, as well as the housing 22, to assume a triangular shape to blend in or to accent the existing shapes on the necklace.

[0038] As illustrated in FIG. 3, the arms 24a, 24b preferably comprise a displaceable portion 30 in connection with the clasp 26. In the embodiment depicted in FIG. 3, the displaceable portion 30 comprises a portion of the clasp 26...
that is rotatable into the eyelet or aperture 28 formed by the clasp 26. The displaceable portion 30, in the illustrated embodiment, is preferably biased outward by a spring or like mechanism at the base of the clasp 26. To move the displaceable portion 30, the portion 30 is pressed with a force greater than the biasing force. When the biasing force is overcome, the displaceable portion 30 moves inward toward the eyelet or aperture 28. This movement is depicted by the arrow 36 showing movement of the displaceable portion 30 into the eyelet or aperture 28. This movement creates a discontinuity 31 in the clasp 26 to permit attachment of the jewelry to which the fastener 20 is to be connected. For example, when the displaceable portion 30 is moved inward and the discontinuity 31 is exposed in the clasp 26, an end of a jewelry piece may be connected to the fastener 20 by sliding the clasp 26 at the discontinuous portion through an eyelet at the end of the jewelry piece. Once the eyelet of the jewelry piece is over the clasp 26, the displaceable portion 30 may be released, allowing the displaceable portion 30 to return to its original configuration, as depicted in FIG. 2. In this configuration, the clasp 26 extending through the eyelet of the jewelry piece, the fastener 20 is securely coupled with the jewelry piece.

While the clasp 26 is depicted in FIG. 3 as having a displaceable portion 30 that moves inward into the eyelet or aperture 28, other configurations of clasp 26 can be used in connection with the fastener 20. For example, clasps having a slideable member, such as is used in a spring ring, can be used to withdraw the displaceable portion 30 along a length of the clasp 26 thus exposing the discontinuity 31, over which the eyelet of the jewelry may pass. In other embodiments, the displaceable portion 30 can be rotated out of plane with respect to the clasp 26 such that the movement is not into the eyelet or aperture 28. In yet further embodiments, the displaceable portion 30 may comprise the greater portion of the clasp, and the leg that is depicted in FIG. 3 as the displaceable portion can be the stationary member. Accordingly, the greater portion of the clasp may be movable with respect to the smaller clasp member. In some embodiments, the clasp 26 can be displaceable with respect to a portion of the arms 24a, 24b or the housing 22 to expose the discontinuity 31. For example, the clasp 26 can be axially displaceable with respect to a portion of the arms 24a, 24b to expose a discontinuity 31 at the base of one of the clasp 26's legs.

The clasp 26 can be biased in a closed orientation such that when the clasp 26 is released, the clasp 26 returns to its original configuration, thus concealing the discontinuity 31. Accordingly, in this embodiment, the clasp 26 can constitute the displaceable portion 30. As used herein, the term displaceable portion is intended to have its ordinary meaning and is intended to mean, without limitation, a portion that is able to be moved from a first position, orientation, or location, to at least a second position, orientation, or location. For example, the displaceable portion 30 is moved out of its first position, orientation, or location as depicted in FIG. 3 when it is moved inward as depicted by the arrows 36. In other embodiments, examples of which are described above, the displaceable portion can be moved out of plane along its length or in other ways that provide movement of the displaceable portion 30 from its original position, orientation, or location.

FIG. 4 illustrates a side view of the fastener 20 with the two portions coupled together. The two portions 22a, 22b are coupled at a housing junction 38. As depicted in FIG. 4, the arms 24a, 24b can extend in opposite directions with respect to the housing 22 and can be coplanar with respect to a plane 40 extending through both arms 24a, 24b. In other embodiments, the arms 24a, 24b can extend in generally opposite directions from the housing 22 along planes that are not coplanar. For example, the arms 24a, 24b can extend from the housing 22 in planes that intersect at an angle. In some embodiments, the planes 40 intersect at an angle that is greater than about 90°, and in other embodiments, the planes intersect at an angle that is about 90° or less than about 90°. In some embodiments, the arms 24 reside in planes 40 that intersect at an angle between about 120° and about 170°.

FIG. 5 illustrates the separation of the two portions 22a, 22b of the fastener 20 as the two portions 22a, 22b are moved apart from one another, depicted by the arrows 42. With the two portions 22a, 22b of the fastener 20 are separated, coupling surfaces 44 are exposed on an interior portion 46 of the portions 22a, 22b. The coupling surfaces 44 are the surfaces on the interior portion 46 of the housing 22 that engage another when the housings 22 are coupled together. In some embodiments, as depicted in FIG. 5, a protrusion 48 can extend from the coupling surface 44 in the interior portion 46 of one of the portions 22a, 22b. For example, as depicted, a protrusion 48 can extend from the coupling surface 44 of the second portion 22b. A corresponding channel or other receiving surface can be provided on the coupling surface 44 of the first portion 22a. When the two portions 22a, 22b of the fastener 20 are coupled together, the protrusion 48 extending from the coupling surface 44 of the second portion 22b is configured to extend in a mating relationship into the channel or other receiving surface of the coupling surface 44 of the first portion 22a. As the protrusion 48 extends into the channel or other receiving surface, the two portions 22a, 22b of the fastener will be less likely to inadvertently disconnect by sliding between the two coupling surfaces 44.

In some embodiments, disconnecting the two portions 22a, 22b of the fastener 20 can be achieved by placing the index fingers on a top side 50 of the arms 24a, 24b while placing a thumb on a bottom side 52 of the housing 22 and by pulling the top sides 50 downward while pressing forward with the thumb on the bottom side 52 of the housing 22. As the top sides 50 of the arms 24a, 22b are pulled backwards the two portions 22a, 22b will pivot with respect to each other, thus disengaging the magnetic coupling between the two portions 22a, 22b, and will disengage the protrusion 48 from the channel or other receiving surface of the first portion 22a. When the magnetic coupling between the two portions 22a, 22b is broken and the protrusion 48 is withdrawn from the channel or other receiving surface, the two portions 22a, 22b of the fastener 20 can be moved apart as depicted by the arrows 42.

When the arms 24a, 24b are not rotatably connected to the housing 22, the two portions 22a, 22b of the fastener 20 can be disconnected by rotation of the arms 24a, 24b in opposite directions. For example, the arms 24a, 24b may be gripped by a user between the index finger and the thumb, and rotated in opposite directions. As the arms 24 are rotated, the two portions 22a, 22b will also rotate in opposite directions, thus breaking the magnetic coupling between the two portions 22a, 22b. The two portions 22a, 22b can then be withdrawn from each other as depicted by the arrows 42.
[0045] In order to reconnect the two portions 22a, 22b of the fastener 20, the two portions 22a, 22b are oriented such that the coupling surfaces 44 are facing each other. The two portions 22a, 22b are then brought close enough to each other for the magnets to attract the portions together. The magnets are preferably oriented to draw the two housings 22 together in a way in which the protrusion 48 on the first portion 22a will automatically be seated into the channel or receiving surface on the second portion 22b. With the protrusion 48 extending into the channel or receiving surface and the magnetic coupling restored, the two portions 22a, 22b of the fastener are securely coupled together.

[0046] In some embodiments, the connection between the arms 24a, 24b and the portions 22a, 22b may include overlapping portions 49a, 49b. The overlapping portions 49a, 49b can be a portion of the arms 24a, 24b that are not connected to the housings 22a, 22b. For example, in FIG. 5, the arm 24a is illustrated as being coupled to the first portion 22a such that the overlapping portion 49a will extend over a portion of the second portion 22b when the two portions 22a, 22b are coupled together. Likewise, the arm 24b is illustrated as being coupled to the second portion 22b such that the overlapping portion 49b of the arm 24b will extend over a portion of the first portion 22a when the two portions 22a, 22b are coupled together. The overlapping portions 49a, 49b can provide further reinforcement of the magnetic coupling between the two portions 22a, 22b by providing abutments for the two portions 22a, 22b. The abutments restrict or limit movement of the portions 22a, 22b and reduce the likelihood that the portions 22a, 22b inadvertently slide with respect to each other.

[0047] The overlapping portions 49a, 49b can also operate to provide an alignment guide when coupling the two portions 22a, 22b together. For example, when coupling the two portions 22a, 22b, a person can abut portion 22a against the overlapping portion 22b, which will substantially align the two portions 22a, 22b. With the portion 22a abutting the overlapping portion 22b, the two portions 22a, 22b can then be rotated towards each other until the magnets attract the two portions 22a, 22b together and form a magnetic coupling. The overlapping portions 49a, 49b can also assist in the rotational alignment of the two portions 22a, 22b to orient the arms 24a, 24b in the proper, desired directions.

[0048] With reference to FIG. 6, the first portion 22a of the disconnected fastener is illustrated, exposing the interior portions 46. A magnet 54 is preferably included in the interior portion 46, which is depicted in FIG. 6 as being generally centrally located in the interior portion 46 of the housing 22. Adjacent the magnet 54 is preferably a first interior coupling surface 56 that is concentrically located about the magnet 54. The interior portion 46 preferably also includes a first interior coupling surface 58 extending about the periphery of the interior portion 46.

[0049] In some embodiments, the first interior coupling surface 58 is either higher or lower than the first interior coupling surface 56. In these embodiments, a first transitioning surface 60 extends between the first interior coupling surface 56 and the first peripheral coupling surface 58. The first transitioning surface 60 can be an abrupt, stepwise transition between the other surfaces 56, 58, or the transitioning surface 60 can be a series of steps or even a ramp. The first transitioning surface 60 is configured to provide an edge or shoulder that abuts a corresponding edge or shoulder on the second portion 22b to reduce the likelihood of the two portions 22a, 22b from sliding with respect to each other when the portions 22a, 22b are magnetically coupled together.

[0050] FIG. 7 shows the second portion 22b also exposing the interior portion 46 of the housing 22. A magnet 54 is generally centrally located in the interior portion 46 of the second portion 22b, and adjacent the magnet 54, and preferably concentrically located about the magnet 54, is a second interior coupling surface 62. The second interior coupling surface 62 is preferably configured to engage or abut the first interior coupling surface 56 of the first portion 22a when the two portions 22a, 22b are magnetically coupled together. The interior portion 46 also preferably includes a second peripheral coupling surface 64 extending about the periphery of the interior portion 46 of the second portion 22b.

[0051] In some embodiments, the second peripheral coupling surface 64 is higher or lower than the second interior coupling surface 62. In such embodiments, a second transitioning surface 66 is provided between the second peripheral coupling surface 64 and the second interior coupling surface 62. Similar to the first transitioning surface 60, the second transitioning surface 66 can be an abrupt, stepwise transition between the other surfaces 62, 64, or the second transitioning surface 66 can be a series of steps or even a ramp. Preferably, the profile of the second transitioning surface 66 is similar to the profile of the first transitioning surface 60. When the two portions 22a, 22b are coupled together, the two transitioning surfaces 60, 66 is abut or engage each other, thus reducing slippage between the coupling surfaces 44 of the two portions 22a, 22b.

[0052] While the magnets 54, the interior coupling surfaces 56, 62, the peripheral coupling surfaces 58, 64, and the transitioning surfaces 60, 66 are depicted in FIGS. 6 and 7 having a circular or annular shape, other shapes can also be used. For example, the surfaces and magnets can be oval, triangular, square, rectangular, hexagonal, octagonal, or other shapes. In some embodiments, the interior portion 46 may have only one or two of the surfaces, and the surfaces can be oriented or positioned differently than depicted in FIGS. 6 and 7. For example, in some embodiments, the magnets 54 may not be generally centrally located in the housing 22.

[0053] FIG. 8 illustrates a cross-sectional view of the housing 22 in a coupled configuration. FIG. 8 depicts an embodiment in which the first peripheral coupling surface 58 is higher than the first interior coupling surface 56. Extending between the first peripheral coupling surface 58 and the first interior coupling surface 60 is the first transitioning surface 60. With the first interior coupling surface 56 in a recessed configuration with respect to the first peripheral coupling surface 58, the first interior coupling surface 56 can comprise a channel or a receiving surface about or adjacent at least a portion of the magnet 54. FIG. 8 also illustrates the second interior coupling surface 62 having a higher profile than the second peripheral coupling surface 64. Extending between the second interior coupling surface 62 and the second peripheral coupling surface 64 is the second transitioning surface 66. The elevated second interior coupling surface 62, which can extend at least a portion about or adjacent the corresponding magnet 54, constitutes a protrusion extending from the coupling surface 44. As illustrated, the second internal coupling surface 62 constitutes a protrusion on the second portion 22b that is configured to be
received within the channel or receiving surface, which is the first interior coupling surface 56 of the first portion 22a. When the two portions 22a, 22b are coupled together, the coupling surfaces 44 form an interlocking configuration that reduces the likelihood of slippage between the coupling surfaces 44.

In some embodiments, the magnets 54 can provide further interlocking mechanisms. For example, the first interior coupling surface 56 can be lower than a top surface of the corresponding magnet 54. Additionally, the second interior coupling surface 62 can be higher than the top surface of its corresponding magnet 54. In such configurations, the magnets may provide another interlocking mechanism when the housings 22 are coupled together. In some embodiments, the portions 22a, 22b may have yet further interlocking mechanisms. For example, the portions 22a, 22b may have interlocking latches, biasing locks, or other engaging members to further secure the magnetic coupling of the two portions 22a, 22b.

As illustrated in FIG. 8, in some embodiments the cross-sectional measurement of the housing 22 is less than a cross-sectional measurement of the clasp 26. One advantage in having a clasp 26 that has a cross-sectional measurement greater than that of the housing 22 is that the clasp 26 can provide a larger gripping surface that the user can utilize to engage and disengage the two portions 22a, 22b. For example, a person with large fingers or manicured fingernails can easily use the clasp 26 to separate the two portions 22a, 22b. In some embodiments, the size of the clasp 26, or a cross-sectional measurement of the clasp 26, is about the same as or slightly greater than the size, or cross-sectional measurement, of the housing 22. In yet other embodiments, the size of the clasp 26 can be slightly less than the size of the housing 22. When the clasp 26 is smaller than the housing 22, the advantages described above can still be realized when the clasp 26 provides an adequate gripping surface. While an adequately-sized gripping surface may vary depending upon the size of the user’s fingers, some embodiments can have a clasp 26 that extends from the housing 22 between about ½ of an inch to about 1 inch. In other embodiments, the clasp is greater than about 1 inch, or the clasp 26 is less than about ½ of an inch. For example, in some embodiments the clasp 26 can extend about 2 inches or more from the housing 22. In a preferred embodiment, the clasp 26 extends from the housing 22 within a range of between about ¼ of an inch and about ½ of an inch. In some embodiments, the clasp 26 extends about ¼ of an inch from the housing 22.

The two portions 22a, 22b can also comprise mechanisms for facilitating proper orientation of the respective portions 22a, 22b of the fastener 20 when they are coupled together. In some embodiments, an alignment portion 68 can be provided that serves to properly orient the two portions 22a, 22b when they are coupled together. With reference to FIG. 7, an alignment portion 68 is shown as a flat portion on one edge of the portions 22a, 22b that is configured to engage the other portion 22a, 22b when the two portions 22a, 22b are coupled together. Other alignment portions 68 can include a protrusion extending from the coupling surface 44 of one of the portions 22a, 22b and a receiving surface formed on the coupling surface 44 of the other of the two portions 22a, 22b. The protrusion and the receiving surface can be configured such that the magnetic coupling between the two housings 22 cannot be achieved without the protrusion properly oriented in the receiving surface. In some embodiments, the protrusion is annularly shaped about the magnet and is received within an annular channel extending about the magnet of the other of the two portions 22a, 22b. In some embodiments, the annularly-shaped protrusion and annular channel can instead be shaped as a square, triangle, hexagon, octagon, decagon, and so forth. Additionally, a user may be able to determine that the fastener 20 has been properly coupled together by tactile indication when the housings snap together in a preferred orientation.

The arms 24a, 24b can also comprise a reinforcing member 70 that extends from its respective portion 22a, 22b along a portion of the clasp 26. The reinforcing member 70 can increase the rigidity of the clasp 26 with respect to its respective portion 22a, 22b. As depicted in FIG. 7, one embodiment of the reinforcing member 70 can comprise a semi-cylindrical member that extends about a base of the clasp 26. The reinforcing member 70 can also be configured to form a fluted column, or other ornate configuration, to increase the aesthetic properties of the fastener 20.

In some embodiments, the coupling surface 44 of both portions 22a, 22b can comprise a smooth or otherwise substantially flat surface to facilitate removal of the fastener 20. Additionally, the portions 22a, 22b can be magnetically coupled together without the assistance of the interlocking surfaces described above. In many embodiments, the magnets used to couple the portions 22a, 22b together can be sufficient for securely coupling together the portions 22a, 22b without the added assistance of interlocking surfaces on the interior portions 46. In these embodiments, the fastener 20 will be easier to fasten and disconnect. For example, it may be easier for someone with arthritis to simply slide the portions 22a, 22b apart than to twist or press a certain way to disconnect the fastener 20.

Although the present disclosure has been provided in the context of certain preferred embodiments and examples, it will be understood by those skilled in the art that the present disclosure extends beyond the specifically described embodiments to other alternative embodiments and/or uses and obvious modifications and equivalence thereof. In addition, while a number of variations of the present disclosure have been shown and described in detail, other modifications, which are within the scope of this disclosure, will be readily apparent to those of skill in the art. It is also contemplated that various combinations or sub-combinations of the specific features and aspects of the embodiments may be made and still fall within the scope of the present disclosure. Accordingly, it should be understood that various features and aspects of the disclosed embodiments can be combined with or substituted for one another in order to form varying modes. Therefore, it is intended that the scope of the present invention herein described should not be limited by the particular disclosed embodiments described above.

What is claimed is:
1. An interchangeable magnetic jewelry fastener, comprising:
   a housing having a portion comprising a magnet disposed therein; and
   a clasp member rigidly attached to the housing, the clasp member comprising a displaceable portion that can be manually actuated.
2. The interchangeable magnetic jewelry fastener of claim 1, wherein the magnet is located proximate to a coupling surface of the housing.

3. The interchangeable magnetic jewelry fastener of claim 1, wherein the magnet comprises at least one of neodymium and samarium cobalt.

4. The interchangeable magnetic jewelry fastener of claim 1, wherein the clasp is configured to create a discontinuity in the clasp when the displacementable portion is actuated.

5. The interchangeable magnetic jewelry fastener of claim 1, wherein the clasp is rotatable about a longitudinal axis that is transverse to a surface of the housing.

6. The interchangeable magnetic jewelry fastener of claim 1, wherein the clasp has a greater cross-sectional dimension than the housing.

7. A magnetic jewelry fastener, comprising:
   a first housing configured to house at least a portion of a first magnet, the first housing further comprising a first coupling surface;
   a first clasp being coupled to the first housing, the first clasp comprising a continuous portion and a first actuable member configured such that, when actuated, the first actuable member creates a discontinuity in the continuous portion;
   a second housing configured to house at least a portion of a second magnet, the second housing comprising a second coupling surface; and
   a second clasp being coupled to the second housing, the second clasp comprising a continuous portion and a second actuable member configured such that, when actuated, the second actuable member creates a discontinuity in the continuous portion.

8. The magnetic jewelry fastener of claim 7, wherein the first coupling surface comprises a protrusion extending from the surface and the second coupling surface comprises a portion configured to receive at least a portion of the first coupling surface in a mating relationship when the first housing is coupled with the second housing.

9. The magnetic jewelry fastener of claim 8, wherein the protrusion is annular.

10. The magnetic jewelry fastener of claim 7, wherein at least one of either the first clasp and the second clasp is rigidly coupled to the respective first housing or second housing.

11. The magnetic jewelry fastener of claim 7, wherein at least one of the first and second clasps is rotatable about a longitudinal axis that is transverse to a surface of the respective first or second housing.

12. The magnetic jewelry fastener of claim 11, wherein the axis is generally normal to the surface.

13. The magnetic jewelry fastener of claim 7, wherein a cross-sectional dimension of at least one of the first and second clasps is at least as large as a cross-sectional dimension of the first or second housing.

14. An interchangeable magnetic jewelry fastener, comprising:
   first and second housings, each of said first and second housings comprising first and second magnets, said first and second housings further configured to be coupled at a location of the housings proximate to said magnets; and
   first and second clasps, each rigidly coupled respectively to said first and second housings and configured to extend in substantially opposite directions when said first and second housings are coupled.

15. The interchangeable magnetic jewelry fastener of claim 14, wherein at least one of the first and second clasps is rotatable about a longitudinal axis that is transverse to a surface of the first or second housing.

16. The interchangeable magnetic jewelry fastener of claim 14, wherein a cross-sectional dimension of the clasps is at least as large as a cross-sectional dimension of the first or second housing.

17. The interchangeable magnetic jewelry fastener of claim 14, further comprising means for aligning the first and second housings such that the first and second clasps extend in a preferred orientation when the first and second housings are coupled.

18. The interchangeable magnetic jewelry fastener of claim 14, wherein the magnets comprise at least one of neodymium and samarium cobalt.

19. The interchangeable magnetic jewelry fastener of claim 14, wherein the clasps comprise a continuous portion having an actuable member configured such that the actuable member creates, when actuated, a discontinuity in the continuous portion.

20. The interchangeable magnetic jewelry fastener of claim 14, wherein the coupling of the first and second housings comprises a magnetic coupling.

21. The interchangeable magnetic jewelry fastener of claim 20, further comprising means for reinforcing the magnetic coupling.

22. A method for disconnecting a magnetic coupling of a magnetic jewelry fastener having a first and second housings, each of said first and second housings comprising first and second magnets, said first and second housings being configured to be coupled at a location of the housings proximate to said magnets, said magnetic jewelry fastener further having first and second clasps, at least one of said first and second clasps being rigidly coupled to at least one of said first and second housings, said method comprising gripping the first and second clasps, applying a force to rotate the first and second clasps in substantially opposite directions and to rotate at least one of the first and second housings with respect to the other of the first and second housings, pivoting at least a portion of the first housing on a portion of the second housing, and breaking a magnetic coupling between the magnets of the first and second housings.

23. A magnetic jewelry fastener, comprising:
   a housing having a magnet disposed therein; and
   clasp means rigidly attached to the housing for connecting said housing to an end of jewelry.