A magnetic clasp for securing a piece of jewelry that includes a first connecting device having a first cylindrical magnet with a top surface. The first cylindrical magnet has a hollow cylindrical section located at the center of the first top surface. Additionally, a second connecting device has a second cylindrical magnet with a second top surface. The second cylindrical magnet has a cylindrical protruding member located at the center of the second top surface. The protruding section of the second connecting device fits into the hollow section of the first connecting device. The magnetic clasp locks when the first and second connecting devices are brought together allowing opposite magnetic poles to face each other. To unlock the magnetic clasp the first and second connecting devices are rotatably turned allowing like poles to face each other.
Figure 3(a)

Figure 3(b)
MAGNETIC CLASP FOR PERSONAL ORNAMENTS

FIELD OF THE INVENTION

[0001] The present invention relates to a magnetic clasp or a magnetic connecting device for jewelry, jewelry accessories or personal ornaments such as necklaces, bracelets, or the like and, in particular, to a magnetic clasp to be used to detachably fit or connect the ends of the above-described jewelry or jewelry accessory together.

BACKGROUND OF THE INVENTION

[0002] As for connecting devices that connect the ends of ornamental accessories such as a necklace, a pendant, or the like which is to be put to actual use in the form of an endless chain, there have been disclosed many ideas. A wide and highly used variety of connecting devices uses a construction in which a hook is engaged into a ring. Another variety is one in which a fitting device provided on both ends is engaged by means of a spring force. In wearing the above-described ornamental accessories, the handling for connection or engagement of split ends thereof should preferably be simple seeing that such connecting or engaging operation must be performed at the rear portion of the wearer’s neck with his or her hands wound there around.

[0003] The fitting device made up of a hook and a ring is relatively simple in the connecting and disconnecting operation, but has a disadvantage in that the engagement is likely to be released or come out of engagement without the wearer’s knowledge. Many pieces of jewelry or jewelry accessories have been lost due to this defect. The fitting device to be connected by means of a spring force, on the other hand, is relatively simple and handy, but it is accompanied with the trouble of having to release the spring force at the time of disengagement thereof. The spring release is often a tricky procedure which causes the wearer a loss of time and patience.

SUMMARY OF THE INVENTION

[0004] In view of the foregoing disadvantages, the present invention has an objective of providing a connecting device for jewelry or jewelry accessories that easily engages and disengages at the rear of the wearer’s neck and is not likely to easily come out of engagement during wearing.

[0005] According to the present invention, the foregoing and other objects are attained by a fitting device for a magnetic clasp for securing a piece of jewelry, comprising: first connecting means including a first cylindrical magnet having a first top surface, said first cylindrical magnet having a hollow cylindrical section located in the center of said first top surface, and said first top surface is split into at least two opposite magnetic poles; second connecting means including a second cylindrical magnet having a second top surface, said second cylindrical magnet having a cylindrical protruding member located in the center of said second top surface, said second top surface is split into at least two opposite magnetic poles, and wherein said protruding member of said second connecting means fits into said hollow section of said first connecting means.

[0006] The invention further comprises a locking means for connecting said first and second connecting means, wherein said first and second connecting means are brought together allowing opposite magnetic poles to face each other, thereby creating a magnetic force which locks the first and second connecting means together.

[0007] The invention further comprises unlocking means for disconnecting said first and second connecting means, wherein said first and second connecting means are rotatably turned allowing like magnetic poles to face each other, thereby creating a magnetic force which forces the first and second connecting means apart.

[0008] According to the above-described fitting device, the top surfaces on each end of the jewelry to be fitted together are aligned so that the protruding section of the second connecting means aligns with the hollow section of the first connecting means. Once these sections are aligned the magnets will naturally lock the magnetic clasp in place. The magnet pieces on the magnetized surfaces are arranged such that, at the time of engagement of the connecting members, the opposite poles of the top surfaces face each other. Therefore, when both connecting members are mounted together in this condition, the magnet pieces on both connecting members attract to each other causing the opposite poles of the magnets to face each other. As a consequence, the mounting operation becomes easy.

[0009] In one preferred embodiment, when the projection is rotated 180°, the magnet pieces will be in a position in which the same magnetic poles face each other. It follows that the connecting members are urged against each other through the repelling forces of the magnet pieces. The connecting devices will then disengage. Since the connecting members are connected together through these engaging movements, an external force, if any, to work on the connecting members mainly operates to separate the connecting members apart to release their engagement.

[0010] It follows that the fitting device of the present invention can be used without failure by a simple operation. Namely, at the time of engagement, the connecting members may be forced by aligning the protruding member with the hollow section and, at the time of disengagement, the connecting members may be rotated 180° relative to each other allowing the protruding member to be pulled out from the hollow section.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The above and other objects and the attendant advantages will become readily apparent by reference to the following detailed description when considered in conjunction with the accompanying drawings wherein:

[0012] FIG. 1 is a perspective view of a necklace as an example in which the fitting device of the present invention is used.

[0013] FIG. 2 is a perspective view showing the fitting ends of connecting members.

[0014] FIGS. 3(a) and 3(b) are views showing the preferred magnetic arrangement for the fitting ends of the connecting members.

[0015] FIG. 4 show a modified embodiment of the fitting end portions of the connecting members.

[0016] FIG. 10 is showing the connecting members fitted with swivel portions.
DETAILED DESCRIPTION

[0017] Attaching the ends of a necklace together can be a difficult task for most. The difficulty increases for the disabled, the young, the elderly or anyone that has diminished dexterity. The present invention overcomes these disadvantages by allowing a user to attach the two ends of a necklace together with relative ease.

[0018] A user only has to bring the two ends of the necklace within a certain proximity with respect to each other, then using a protruding portion on one end of the necklace, align the ends together and let nature take care of the rest. That is, once the ends are aligned, a magnetic force is placed on both ends of the necklace will attract the two ends of the chain together and securely lock the necklace in place. A detailed explanation is described below.

[0019] FIG. 1 denotes an ornamental accessory, such as, a bracelet, a necklace or the like, utilizing a magnetic clasp. The magnetic clasp, as shown, consists of two connecting members 1, 2 that are mounted on the ends of the ornamental accessory. These connecting members or fitting devices 1, 2 are fitted or engaged together through the use of magnets 3, 4. That is, the fitting ends 3, 4 of the connecting members 1, 2 are magnets. The arrangements of these magnets are discussed below.

[0020] Specifically, the fitting or connecting ends 3, 4 of the connecting members 1, 2, both being formed into the shape of cylinders allows the connecting ends 3, 4 to be fitted or engaged together in a rotational manner. In this illustrated example, the connecting members 1, 2 when placed opposite each other lock into place and form a large cylindrical rod. The fitting ends 3, 4 are cylindrical in shape but may be arbitrarily made into squares, polygons or the like, as long as the fitting ends 3, 4 can be placed in a rotational manner relative to each other.

[0021] FIG. 2 illustrates in more detail the fitting ends 3, 4. The fitting ends 3, 4 shall be made into cylindrical form. This allows for their rotation relative to each other. And placed on one cylindrical fitting end 3 is a hollow section 10 and on the other fitting end 4 is a protruding member 11. The hollow section 10 is formed such that the protruding member 11 will fit securely into the hollow section 10. This arrangement aligns the connecting devices 1, 2 perfectly together before engagement of the locking mechanism. Once the connecting devices 1, 2 are properly aligned the magnetic properties of the fitting ends 3, 4 will naturally attract each fitting end 3, 4 to each other allowing the connecting devices 1, 2 to lock into place.

[0022] FIGS. 3(a) and 3(b) display the placement of the magnetic properties on the fitting ends 31, 32. The magnets are arranged so that each fitting end has at least two magnetic poles. Fitting end 31 has magnetic poles +33 and –34 while fitting end 32 has magnetic poles +35 and –36. These magnetic poles 33-36 are set in the peripheral direction.

[0023] In the preferred embodiment, shown in FIGS. 3(a) and 3(b) the magnetic properties of each fitting end consist of a set of + poles and – poles. The amount of rotation about the center requires a rotational length equivalent to 180°. This provides sufficient repelling forces due to opposing magnetic poles at the time of engagement ensuring a secure locking of the connecting members.

[0024] According to the present invention as shown in FIG. 2, when a pair of connecting members 1, 2 are fitted together, magnetically opposite poles 33 and 35, 34 and 36 of magnet pieces are caused to face each other such that their attracting forces are advantageously utilized to facilitate the engagement. After one connecting member 2 has been thrust or engaged into the other connecting member, the clasp is automatically brought into engagement due to the magnetic forces of the opposite magnetic poles. The engagement of the connecting members is easily made simply by thrusting the fitting ends 3, 4 together and inserting the protruding member 11 into the hollow section 10. Because the fitting ends are in a cylindrical shape the rotating operations of the magnetic clasp are simple.

[0025] The magnetic clasp is easily disengaged by repelling forces of the magnets. That is when disengaging the two fitting ends 3, 4 the connecting members are turned 180° aligning the like poles. Specifically, the like poles 33 and 36 will be facing each other and like poles 34 and 35 will face each other. This aligning of like poles will separate the fitting ends 31 and 32.

[0026] In this invention, the fitting ends are caused to be connected or fixed together by means of the operating forces of the magnet to magnetically repel or separate them apart. Therefore, there is no possibility that the engagement is released by an external force while the ornamental accessory is in use. This invention has an advantage that a safe use of the accessory can be secured and that a simple and cheap construction thereof becomes possible.

[0027] The embodiment of FIG. 2 shows that the fitting ends 3, 4 are flat but this is not always the case. FIG. 4 shows another embodiment wherein the fitting ends 61 and 62 are concave 61 and convex 62. This modification allows protruding member 63 to easily slide in the hollow portion 64. Since the hollow section 64 is located on the concave surface 61 when a wearer tries to engage the connecting devices the protruding member 63 will press against the concave surface 61. This force will utilize the curve of the concave surface 61 and will guide the protruding member 63 into the hollow portion 64.

[0028] FIG. 5 shows a locked magnetic clasp 100 with each connecting device 103, 104 having a swivel portion 101, 102 attached to its side. The swivel portion allows the chain to spin without getting tangled.

[0029] The advantage of placing the swivel portion on the side is that it allows a user to easily hold the connecting devices and the swivel portion at the same time. This gives a user better control when aligning the connecting members 103, 104 together.

[0030] It is readily apparent that the above-described fitting device meets all of the objects mentioned above and has the advantage of wide commercial utility. It should be understood that the specific form of the invention herein-above described is intended to be representative only, as certain modifications within the scope of these teaching will be apparent to those skilled in the art.

[0031] Accordingly, reference should be made to the following claims in determining the full scope of the invention.
What is claimed is:

1. A magnetic clasp for securing a piece of jewelry, comprising:
   first connecting means including a first magnet having a first top surface, said first magnet having a hollow section located in the center of said first top surface, and said first top surface being divided into at least two opposite magnetic poles; and
   second connecting means including a second magnet having a second top surface, said second magnet having a protruding member located in the center of said second top surface, said second top surface being divided into at least two opposite magnetic poles, and wherein said protruding member of said second connecting means fits into said hollow section of said first connecting means.

2. The magnetic clasp as claimed in claim 1, further comprising:
   locking means for connecting said first and second connecting means together, wherein said protruding member is aligned with said hollow section allowing the opposite magnetic poles of the first and second top surfaces to face each other, thereby locking the first and second connecting means together.

3. The magnetic clasp as claimed in claim 2, further comprising:
   unlocking means for disconnecting said first and second connecting means, wherein said first and second connecting means are rotatably turned allowing like magnetic poles on the first and second top surfaces to face each other, thereby forcing the first and second connecting means away from each other.

4. The magnetic clasp as claimed in claim 1 wherein said first top surface and said second top surface are flat.

5. The magnetic clasp as claimed in claim 1 wherein the first top surface is concave and the second top surface is convex.

6. The magnetic clasp as claimed in claim 1, further comprising:
   swivel means for allowing said first connecting means and said second connecting means to spin.

* * * * *