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MAGNETIC EARRING CONSTRUCTION INCLUDING MEANS
TO CONCENTRATE THE MAGNETIC FORCE
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Fig. 1.

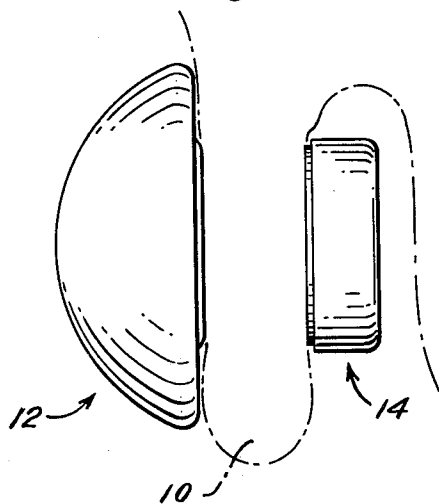


Fig. 2.

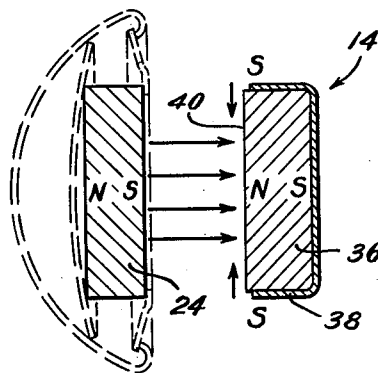


Fig. 3.

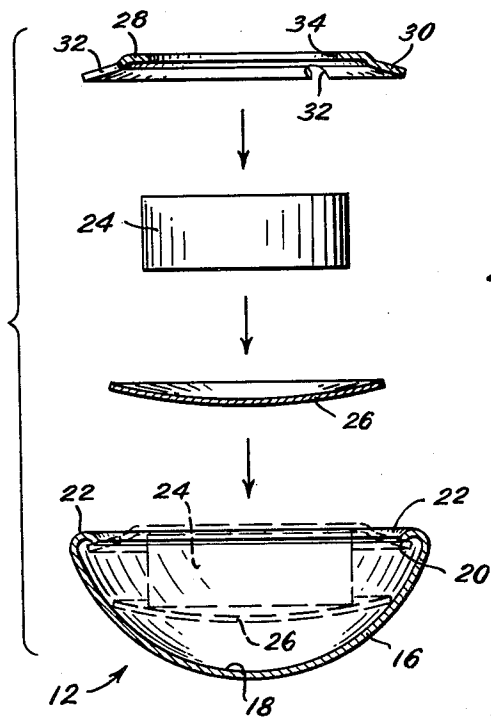
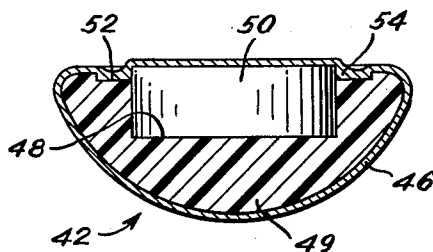


Fig. 4.



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1

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MAGNETIC EARRING CONSTRUCTION INCLUDING MEANS TO CONCENTRATE THE MAGNETIC FORCE

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1 Claim. (Cl. 63—14)

The present invention relates to an earring construction. More particularly, the present invention relates to an earring that includes magnetic elements that cooperate to effectively retain the earring on the ear of the wearer.

The usual construction of earrings heretofore has required that a clamping element be utilized to effectively retain the earring on the ear of the wearer. These clamping elements have normally consisted of a screw type of clamp or a clip type of clamping member that coats with an upright arm to which the ornament is secured for effectively retaining the earring on the ear of the wearer. Many women object to the clamp type of earring because of the pressure necessary to maintain the earring on the ear lobe, and as a result, these heretofore known types of clamping elements for earrings frequently had to be adjusted in accordance with the wearer's requirements. From an aesthetic point of view, many women prefer the pierced type of earring which eliminates the portion of the earring that extends under the ear lobe and thereby presents a neater appearance. Moreover, the pierced type of earring is more comfortable in use since the clamping element is eliminated. However, some women have objections to piercing their ears in order to accommodate the pierced type of earring and therefore by necessity must resort to some form of a clamp type of earring construction. The present invention is designed to eliminate the objectionable clamping element heretofore associated with earrings; yet by nature of its construction, the present invention further gives the appearance of being a pierced type of earring. In order to achieve this unusual effect, the present invention incorporates magnetic elements, one of which has the earring ornament secured thereto and is positioned on the front side of the wearer's ear, and the other of which is independent of the first magnetic element and is positioned on the rear side of the wearer's ear, the magnetic elements being effectively retained in position on the wearer's ear by their magnetic attraction. In order to more effectively retain the ornament on the ear of the wearer through the magnetic attraction of the magnetic elements, at least one of the magnetic elements embodied herein is provided with a mild steel pole piece that contacts a substantial portion of the pole area thereof. By this arrangement, the mild steel pole piece is adapted to increase the magnetic flux paths between the opposed magnetic elements, and thus directs the magnetic flux into a smaller area at the pole face of the magnetic element it surrounds. By increasing the working flux, a more direct flux path with less leakage is produced, thereby increasing the force between the magnetic elements to enable them to be more effectively clamped on the ear of the wearer.

Accordingly, it is an object of the present invention to provide an earring construction that includes magnetic elements for effectively retaining the earring construction on the ear of the wearer.

Still another object is to provide magnetic elements that are independent and noninterconnected and are adapted to be placed on opposite sides of a wearer's ear for effectively retaining an earring ornament in position thereon.

Still another object is to provide magnetic elements for use in an earring construction wherein at least one of the magnetic elements is mounted in a metallic shell that de-

2

fines a mild steel pole piece for directing the magnetic flux into a smaller area at the pole face thereof, thereby increasing the force between the magnetic elements when they are mounted on the ear of the wearer.

5 Still another object is to provide an earring which utilizes magnetic elements for securement on the ear of a wearer and which includes an ornament having a recess formed therein in which one of the magnetic elements is secured by a locking disc or ring.

10 Still another object is to provide a magnetic earring construction wherein a magnet is mounted in the ornament of the earring construction and is secured therein by adhesive material, the outer surface of the magnet being coated by the ornamental coating that is applied to the ornament.

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

20 In the drawings which illustrate the best mode presently contemplated by me for carrying out my invention:

FIG. 1 is an elevational view of the earring construction embodied in the present invention illustrating the relative position of the magnetic elements and the earring ornament as they are applied to the ear of the wearer;

25 FIG. 2 is a sectional view of the magnetic elements showing one of the magnets encased in a metallic shell;

FIG. 3 is an exploded elevational view of one form of the invention showing the manner in which the ornament magnet is retained in position in its ornament, the magnet and locking member being shown assembled in the ornament as indicated by the dotted lines; and

30 FIG. 4 is another form of the invention wherein the ornament magnet is retained in position by an adhesive material and an ornamental coating that is applied to the outer surfaces of the ornament.

Referring now to the drawings and particularly to FIG. 1, the magnetic earring construction of the present invention is illustrated as it is applied to the ear of the wearer, the wearer's ear being indicated in dotted lines at 10. The magnetic earring construction embodied herein comprises an ornament assembly generally indicated at 12 and a retaining unit generally indicated at 14. The ornament assembly 12 includes an ornamental member 16 that may be formed in any desired configuration or design, but as illustrated in the drawings, is shown in the form of an enlarged pearl button.

Referring to FIG. 3, the ornament assembly 12 is illustrated in detail and as shown includes the ornamental member 16, which is preferably formed of a metallic material although it is understood that other materials, such as plastic, may be utilized therefor. The ornamental member 16 is dish shaped in configuration and therefore has a convex ornamental outer surface and a concave inner surface that defines a recess 18, the peripheral edge 20 of the ornamental member 16 being rolled inwardly to form an outer annular rounded portion 22. Positioned in the recess 18 of the ornamental member 16 is a magnet or magnetic element 24. Since the construction of the magnetic element 24 is such that the outer surface thereof would not normally project beyond the annular rounded portion 22 of the ornamental member 16, an inner disc 26 is provided for supporting the magnetic element 24. The inner disc 26 is slightly dished and is dimensioned such that the peripheral edge thereof engages the inner surface of the recess 18 at a point spaced approximately intermediate the inner and outer ends thereof. The magnetic element 24 is adapted to be seated on the concave side of supporting disc 26 and extends outwardly such that the outer surface thereof is substantially coextensive with the annular portion 22 of the ornamental member 16. In order to secure or lock the

3

magnetic element 24 in the ornamental member 16, a retaining ring 28 is provided and includes an outwardly extending skirt portion 30 that is adapted to project under the peripheral edge 20 of the ornamental member 16. Slots 32 are formed in the retaining ring 28 and provide for the positioning thereof or removal thereof from the ornament assembly 16, it being apparent that a tool may be inserted into the slots 32 for locating the retaining ring 28 as required. Formed centrally in the retaining ring 28 is an opening 34, the diameter of which is slightly less than the diameter of the cross section of the magnetic element 24. It is seen, therefore, that an annular portion of the retaining ring 28 adjacent the opening 30 engages the outer peripheral edge 20 of the magnetic element 24 and cooperates with the supporting disc 26 to securely lock the magnetic element 24 within the recess 18 of the ornamental member 16. As illustrated, the ornamental member 16 is formed in substantially a semispherical configuration and thus is adapted to receive the magnetic element 24 which is formed in a reduced cylindrical construction. It is understood that if the ornamental member 16 were formed with another configuration, the recess 18 and the cooperating magnetic element 24 could be formed with a corresponding configuration.

When the ornamental member 16 is applied to the ear 10 of the wearer, the outer surface of the magnetic element 24 is placed in engagement with the outer side of the ear 10. Since the ornamental member 16 must fit flush against the outer surface of the ear 10, the outer surface of the magnetic element 24 is located coextensive with the peripheral portion 22. Thus, the magnetic element 24 is seated within the recess 18 without projecting above the outer edges thereof, and, as such, the ornament assembly 12 is formed in a compact construction that does not include any projecting or extending portions.

In order to positively secure the ornament assembly 12 to the outer surface of the wearer's ear, the retaining unit 14 is provided and includes a cylindrically shaped magnet 36. The magnet 36 corresponds in size and shape to the magnetic element 24, and it is understood that if the magnetic element 24 were formed in another geometric form, the magnet 36 would be similarly formed. In the normal use of permanent magnets for exerting a mechanical force, the opposite poles of the magnets must be positioned in opposed relation. The magnetic flux that results when the magnets are spaced from each other to define an air gap therebetween is a function of the force existing between the two magnetic objects. It has been found that by decreasing the pole area of at least one of the magnets, the flux density between the magnets will be increased, thereby increasing the magnetic force therebetween. The pole area of either of the magnets may be decreased by positioning a mild steel pole piece in contact with the pole surfaces thereof. By utilizing the mild steel pole piece, the magnetic flux is directed into a smaller area at a pole face of the magnet, thereby increasing the flux density between the opposed magnets.

Referring now to FIG. 2, the principle discussed hereinabove is illustrated as it is applied to the invention embodied herein, the ornament assembly 16 being shown in dotted lines and spaced from the magnet 36 as in the position of use and defining an air gap therewith. In order to decrease the pole area of the magnet 36 and thereby increase the magnetic force therebetween and the magnet 24, a steel shell 38 is provided and is dimensioned to snugly receive the magnet 36 therein, a pole face 40 of the magnet 36 being exposed. As illustrated diagrammatically in FIG. 2, the edges of the steel shell 38 adjacent the pole face 40 are oppositely charged with respect thereto and cooperate to direct the flux paths into a smaller area. The magnetic pole area is thus decreased, which in effect increases the flux density, thereby markedly increasing the force between the mag-

4

nets 24 and 36. The shell 38 is formed of a mild steel material and may be polished or coated to produce an ornamental finish as desired. It is seen that the increase in force between the magnets 24 and 36 due to the decreasing of the pole area of the magnet 36 results in a stronger retaining action of the magnetic earring construction as it is applied to the ear of the wearer.

In use, the ornament assembly 12 is placed on the front side of the wearer's ear 10 with the magnetic element 24 engaging the ear lobe in flush relation therewith. The retaining element 14 is then placed behind the ear 10 with the exposed pole face of the magnetic element 36 in engagement with the rear side of the ear 10. The magnetic attraction between the magnetic elements 24 and 36 causes the retaining element 14 and the ornament assembly 12 to be firmly retained in position on the wearer's ear 10. It is seen that the ear 10 in effect defines an air space between the magnetic elements, and because of the use of the pole piece or steel shell 38 in connection with the magnetic element 36, the flux density between the magnetic elements is increased over that which would normally be expected without the use of the pole piece 38. Thus the magnetic earring structure is more firmly retained on the ear 10.

Referring now to FIG. 4, a modified form of the invention is illustrated and shows another manner in which a magnetic element may be incorporated or employed with an ornamental element. As shown in FIG. 4, an ornament assembly generally indicated at 42 includes a solid plastic button 44 that is formed with a convex outer surface that is coated with an ornamental material indicated at 46 which in effect simulates a pearl button or the like. Formed in the rear side of the ornamental member is a recess 48 in which a magnet 50 is positioned. The recess 48 is dimensioned to snugly accommodate the magnet 50 which is secured in place in the recess by applying an adhesive to the undersurfaces thereof and to the corresponding surfaces of the recess 48. With the magnet 50 disposed in the recess 48, the outer surface thereof projects just beyond the adjacent peripheral edge of the ornament and is thus adapted to positively engage the front side of the ear of the wearer in flush engagement therewith. The exposed surface or outer face of the magnet 44 may be disguised by applying the ornamental coating material 46 thereto, and, as shown in FIG. 4, an annular groove 52 is formed adjacent the magnet 50 into which the coating material 46 is deposited to form an annular seal 54. The accumulation of the coating material 46 in the groove 48 that defines the seal 54 cooperates with the adhesive that secures the magnet 50 within the recess 42 to firmly lock the magnet 50 in position.

In use, the ornament 42 is placed on the front side of the wearer's ear, the magnet 50 engaging the outer surface of the ear. A retaining element similar to the retaining member 14 and including a magnetic element having a shell or pole piece therearound will then be applied to the rear side of the ear to secure the ornament 42 on the wearer's ear.

In the description of the ornament assemblies 12 and 42, the magnets 24 and 50 associated therewith were described as being formed in a cylindrical construction but without a steel shell or pole piece therearound. It is understood that if necessary or desired these magnets may also include a pole piece for concentrating the magnetic flux into a smaller area at the pole face thereof. Thus, if a heavy ornament is utilized, it may be necessary to incorporate a steel shell with both of the magnetic elements that comprise the magnetic earring construction. However, in the preferred form of the invention, only one of the magnetic elements will utilize a steel shell or pole piece in conjunction therewith.

It is seen that the magnetic earring construction embodied herein is simple in construction and may be manufactured relatively inexpensively because of the simplicity

of the magnetic elements and other structural details incorporated therein. Since the prior known clamping elements have been eliminated by this new type of retaining means for earrings, a pierced-ear effect is achieved. Even though the well-known principle of magnetic attraction is utilized herein, a new result is obtained. Furthermore, by providing the mild steel pole piece around the pole area of at least one of the magnetic elements, a concentration of magnetic flux in a smaller area at the pole face of the magnet is obtained whereby the flux density or flux paths are increased to produce a greater magnetic force. Because of the concentration of the magnetic flux into a smaller area, the magnetic elements are firmly retained on the ear of the wearer and cannot be dislodged therefrom, even by shaking of the head or other quick movements of the wearer. However, because of the relatively large surface that engages the wearer's ear and because of the elimination of a spring tensioned clamping member, a comfortable earring construction is provided that is both pleasing in appearance and unique in the manner of application thereof.

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 claim.

What is claimed is:

In a magnetic earring construction, a pair of permanent magnets adapted to be positioned in opposed relation on opposite sides of the ear of a wearer, an ornament secured

to one of said magnets and being located on the outer surface of the wearer's ear said other magnet having a peripheral wall and mutually oppositely facing pole faces, a cup-shaped metallic member of magnetically attractable material having a bottom, wall portions, and an open end, said member encasing the other of said magnets, said bottom engaging one of said pole faces, and outer surfaces of the peripheral wall of said other magnet directly engaging inner surfaces of the wall portions of said metallic member adjacent to the other said pole face, and a pole face of said other magnet being exposed by the open end of said cup-shaped metallic member, so that when said magnets are located in opposed relation on opposite sides of the wearer's ear, the magnetic flux between the magnets is directed into a smaller area at the exposed pole face of said other magnet, wherein the force between said magnets is increased to effectively retain said earring construction on the ear of the wearer.

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