

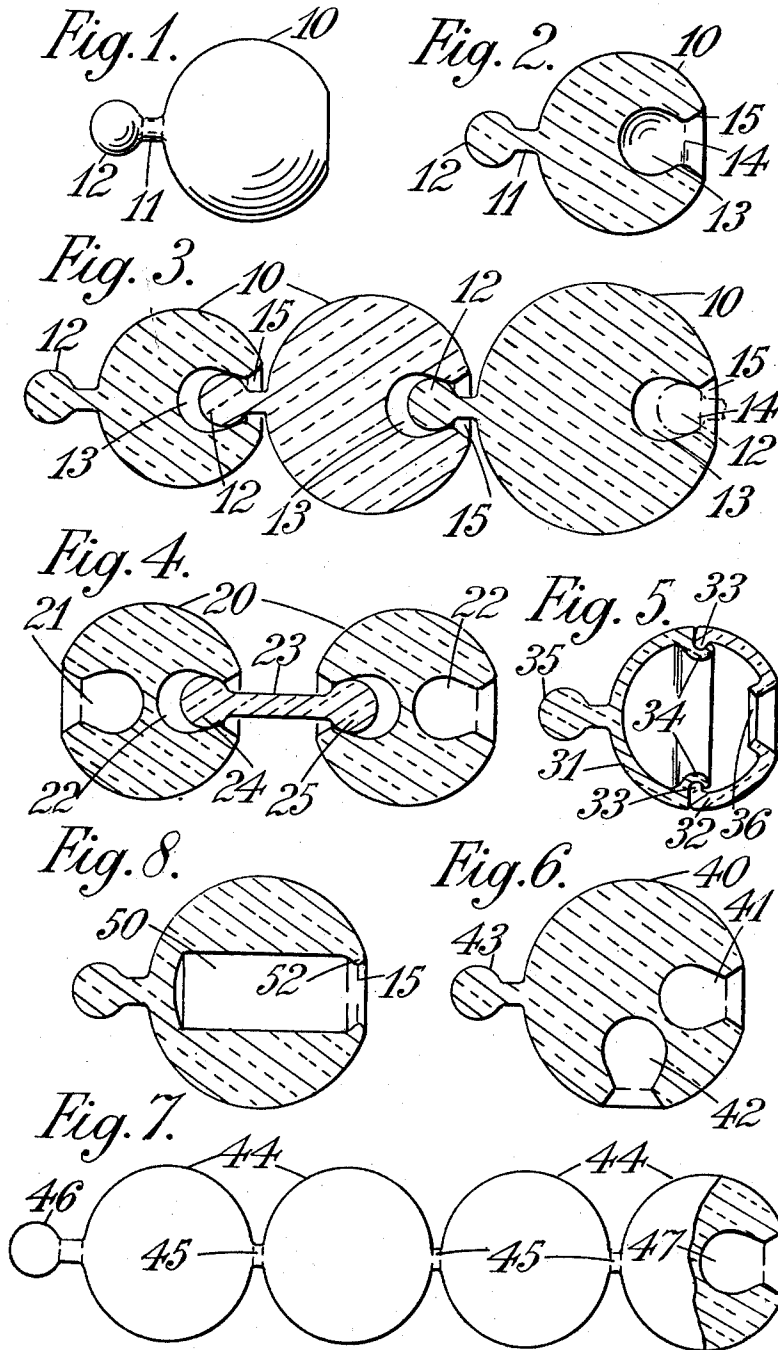
Aug. 2, 1955

G. R. S. CHARLES

2,714,269

ORNAMENTAL BEADED NECKLACE

Filed Jan. 10, 1955



INVENTOR

Geoffrey R. S. Charles

By Watson, Cole, Grindle &  
Watson ATTORNEYS

1

2,714,269

## ORNAMENTAL BEADED NECKLACE

Geoffrey Russell Stafford Charles, Marlow, England, assignor, by mesne assignments, to Joseph H. Meyer Bros., Brooklyn, N. Y., a corporation of New York

Application January 10, 1955, Serial No. 480,903

Claims priority, application Great Britain April 29, 1954

6 Claims. (Cl. 41—10)

This invention relates to ornamental beads and similar bodies and its object is to provide an improved means of connecting or linking such bodies together, for example, to make up a string of beads.

According to this invention, at least one of a pair of bodies which are to be joined together is formed of resilient material; one of the pair is provided with a neck carrying a head and the other is formed with a socket which is entered through a mouth of smaller cross-section than the socket interior, the head on one body and the mouth on the other being so shaped and dimensioned in relation to one another that the head will not ordinarily pass through the mouth but, due to the resilience of said resilient material, can be forced through with a snap action when it is desired to join two bodies together.

The invention is particularly applicable to the making up of a string of beads. Each bead may be provided with a head at one end and a socket at the other so that a string can be made up by a number of such beads.

Preferably each of the bodies to be joined is moulded from synthetic plastic material such as polyethylene and may have the neck and head formed integrally with the main part of the body.

A string of beads or bead members may be formed of beads of different dimensions, the connecting beads and sockets being graded in size, each head being arranged to fit into a socket on the same size bead and into a socket of the next larger and/or the next smaller size. The number of sizes of heads and sockets need not be the same as the number of sizes of beads and it may be found, for example, that two or three sizes of sockets would be sufficient for a necklace of graded beads. However, it will be appreciated that, when possible, the heads and sockets are most conveniently all of the same size.

In an alternative arrangement of beads of the kind described are formed as a set of beads of different dimensions, the connecting heads may be arranged to fit only into correspondingly sized sockets and special junction beads may be provided with heads and sockets of non-corresponding sizes. By this arrangement a graded necklace may be built up with a number of sets of beads, possibly of graded sizes, having the same size heads and sockets and with the various sets of beads joined by the special junction beads.

According to a further feature of the present invention each bead may be formed of a number of parts which are joined together, for example, by being made in the form of two halves of a hemisphere which are subsequently joined. This construction has the advantage that it enables hollow beads to be made, which is particularly advantageous for larger size beads since it saves material and enables a light-weight bead to be made. This form of construction furthermore provides one means of making multi-coloured beads since the various parts of the bead may be made of different coloured materials.

The two halves of a bead formed as two hollow hemispheres may be made to join together with a snap action, for example by forming one hemisphere with a portion,

2

around the mouth, of reduced external diameter so as to fit inside the mouth of the other hemisphere. The two engaging hemispheres may be resiliently locked by forming a number of recesses or a circumferential groove on one of the mating surfaces and corresponding projections or a circumferential ridge on the other.

Another method of making multi-coloured beads is by using a double moulding process. In such a process the first mould may be arranged to produce a bead having a number of recesses or grooves which are filled in the second moulding stage. Alternatively, the first moulding stage may be arranged to produce a series of shaped areas, for example star-shaped areas positioned to lie on the outer surface of the mould for the final moulding and so appearing on the outer surface of the bead.

Another form of multi-coloured appearance may be made by putting plastic material of two or more different colours in the mould in such manner that it is not mixed homogeneously thereby obtaining a streaky or mottled appearance on the surface of the beads.

The method of joining beads or similar bodies described above is applicable to pendant ornaments such as earrings. For some such ornaments it may be desirable to provide beads with more than one socket whereby two or more pendant beads or like bodies may be attached to one bead.

For use in a string of beads, it may be convenient to mould a plurality of beads together as a unit, the beads being joined by a flexible neck. Such a unit would be provided with a neck and head at one end and a socket at the other end so that a series of such units can be joined together or joined to individual beads to form a necklace or the like.

A particular feature of the construction of beads described above is that it permits of considerable flexibility in the junction between the beads. This flexibility may be obtained either by flexibility of the neck or by the freedom of play of the neck in the socket of the next bead. Preferably the socket is formed with a conical or similar opening to permit angular movement of adjacent beads without the necessity of flexing the neck. It may be found desirable in some cases to taper the neck in order to permit greater freedom of movement. Such taper need not necessarily be a straight taper. It will be appreciated also that the use of a long neck will increase the flexibility of a necklace formed from such beads.

It will be understood that modifications of the above construction are possible without departing from the scope of the invention. For example, instead of having a socket on one side and stem on the other, each bead may be formed with two sockets, the beads being connected together by means of separate double-headed stems or link pieces. Furthermore, the invention has applications other than to ornamental beads; a modified form of this construction may be employed in the production of models used to illustrate molecular structures.

The following is a description of a number of embodiments of the invention, reference being made to the accompanying drawings in which:

Figures 1 and 2 are respectively a side elevation and a sectional elevation of a bead constructed according to the invention;

Figure 3 is a cross-section showing, joined together, a number of beads of the kind illustrated in Figures 1 and 2;

Figure 4 is a cross-section through a number of beads of an alternative construction;

Figure 5 is a cross-section through yet a further construction of bead;

Figure 6 is a cross-section illustrating a bead adapted to receive a pendant ornament;

Figure 7 illustrates a construction of necklace in which

individual bead members have a number of bead elements moulded integrally together, and

Figure 8 is a cross-section of a modified form of the bead of Figures 1 and 2.

Referring to Figures 1 to 3, there is shown a construction of bead necklace in which each bead is formed as a solid substantially spherical body 10 having projecting radially therefrom a short and comparatively thin neck 11 carrying a substantially spherical head 12. Diametrically opposite the head 12 is a socket 13 which is entered by way of a mouth 14 of slightly smaller diameter than the head 12 of another bead which is to be received in the socket. The mouth is slightly below the surface of the main part of the body 10 and is entered by way of a tapered entry passage 15. These beads are made by moulding resilient plastic material, such as polyethylene. The resilience of the material permits of the head 12 on one bead being forced through the mouth 14 into the socket 13 of another bead. The socket is made amply large enough to accommodate the head 12. The head can thus move in the socket. Since also there is provided the tapered entry passage 15, the construction allows angular movement between the beads so as to provide the requisite flexibility of a string of such beads. It will be seen that the beads can be strung together without the need of any conventional thread or cord and that, moreover, the conventional clasp for fastening a necklace can also be dispensed with if desired. A necklace may be made up of a number of identical beads but, as shown in Figure 3, the beads may be graded in size. Preferably all the heads and sockets are made of the same size but in a graded necklace it may be necessary on the smaller beads to have smaller heads and sockets. In such a case, the connecting heads and sockets may be graded in size so that each head will fit into a socket on the same size bead and into a socket of the next larger or next smaller size. Alternatively, the connecting heads may be arranged only to fit into correspondingly sized sockets and special junction beads provided with heads and sockets of non-corresponding sizes.

The heads may be made spherical as described above or may be conico-spherical in shape, that is to say, the head is formed of a hemisphere which at its diametral plane is joined to a circular cone, the conical part of the head being arranged with its apex directed outwardly facilitating the assembly of the beads. In this latter case, the socket mouth may conveniently be made circular with a diameter less than that of the major axis of the head.

Figure 4 illustrates an alternative construction in which each bead 20 is provided with two sockets 21, 22. The beads are joined by connecting links each formed by a stem 23 having heads 24, 25 at the two ends thereof. It will be readily apparent that it would also be possible to use the beads 20 with beads having two heads projecting from diametrically-opposite points.

For large beads it may be preferable to construct the bead as a hollow member in order to save material and enable the bead to be of lighter weight. Such a hollow bead may be constructed as shown in Figure 5 in which the bead is formed of two separate moulded parts 31, 32 each of substantially hemispherical form. The part 32 is shown as having an inwardly-directed flange 33 which engages a recess 34 formed on the part 31. The resilience of the material permits the two halves to be joined together with a snap action. It will be appreciated that the flange 33 may not extend completely around the mouth of the hemisphere and might consist only of a number of projecting lugs which engage corresponding recesses in the part 31. The parts 31 and 32 are formed one with a head 35 and the other with a socket 36 for connection to similar beads as in the previously described embodiments. For convenience of moulding, in the two-part bead of Figure 5, the socket is formed by a

short passage which tapers inwardly from both ends to have a throat through which a bead is forced to pass into the hollow interior of the bead. It will be appreciated that hollow beads similar to Figure 5 might be made of more than two parts and also that the various parts may be made of different colours to form multi-coloured beads.

As shown in Figure 6, a bead 40 may be provided with a plurality of heads and/or sockets, for example two sockets 41, 42 and a head 43 so that it may be joined to three other bodies. Such a bead will permit of a pendant ornament being fixed on to a necklace or the like. It will, of course, be appreciated that the heads and/or sockets may be formed in any selected positions.

As shown in Figure 7, a number of beads 44 may be formed as an integral unit joined by necks 45. Such an arrangement may facilitate the construction and assembly of a necklace by reducing the number of units required to be joined together. Each group of beads may be provided with a head 46 at one end and a socket 47 at the other.

Figure 8 is a cross-section of a modified form of the bead of Figures 1 and 2. In Figure 8, the socket is formed by a cylindrical cavity 50 having a throat 51 formed by an inwardly-directed flange 52.

I claim:

1. In a stringless necklace, a chain comprising a plurality of at least four bead members formed of resilient synthetic plastic material having the resilient properties of polyethylene, each pair of adjacent bead members being connected to each other by a ball and socket joint, a first of each pair of said adjacent bead members having an extension in the form of a neck extending from a surface thereof facing the other adjacent bead member, said neck having a head adjacent the outer end thereof, the facing surface of said other adjacent bead member having a socket opening for detachably receiving and retaining the head of the first bead member, said socket opening including a mouth which is of smaller cross sectional area than the interior portion of said socket opening, said head being larger in cross sectional area than the mouth of said socket opening whereby such head will not ordinarily pass through the mouth of a socket opening but due to the resilience of said plastic material may be forced therethrough with a snap action to provide a relatively secure but easily disconnected junction between adjacent beads, said head being smaller than the interior portion of said socket opening and the neck on said bead member in the region adjacent the head being smaller in cross sectional area than said mouth whereby to provide for freedom of play of the neck in the socket opening and flexibility in the junction between each pair of adjacent bead members.

2. In a stringless necklace, a chain comprising a plurality of at least four bead members formed of resilient synthetic plastic material having the resilient properties of polyethylene, each pair of adjacent bead members being connected to each other by a ball and socket joint, a first of each pair of said adjacent bead members having an extension in the form of a neck extending from a surface thereof facing the other adjacent bead member, said neck having a head adjacent the outer end thereof, the facing surface of said other adjacent bead member having a socket opening for detachably receiving and retaining the head of the first bead member, said socket opening including a mouth which is of smaller cross-sectional area than the interior portion of said socket opening, said head being larger in cross sectional area than the mouth of said socket opening whereby such head will not ordinarily pass through the mouth of a socket opening but due to the resilience of said plastic material may be forced therethrough with a snap action to provide a relatively secure but easily disconnected junction between adjacent beads, said head being smaller than the interior portion of said socket opening and the neck on said bead member in the

5

region adjacent the head being smaller in cross sectional area than said mouth whereby to provide for freedom of play of the neck in the socket opening and flexibility in the junction between each pair of adjacent bead members the said mouth being spaced inwardly of the external surface of said other bead member and being connected to said external surface by an inwardly converging passage to facilitate assembly of the bead members.

3. In a stringless necklace, a chain comprising a plurality of at least four bead members formed of resilient synthetic plastic material having the resilient properties of polyethylene, each pair of adjacent bead members being connected to each other by a ball and socket joint, a first of each pair of said adjacent bead members having an extension in the form of a neck extending from a surface thereof facing the other adjacent bead member, said neck having a head adjacent the outer end thereof, the facing surface of said other adjacent bead member having a socket opening for detachably receiving and retaining the head of the first bead member, said socket opening including a mouth which is of smaller cross-sectional area than the interior portion of said socket opening, said head being larger in cross sectional area than the mouth of said socket opening whereby such head will not ordinarily pass through the mouth of a socket opening but due to the resilience of said plastic material may be forced therethrough with a snap action to provide a relatively secure but easily disconnected junction between adjacent beads, said head being smaller than the interior portion of said socket opening and the neck on said bead member in the region adjacent the head being smaller in cross sectional area than said mouth whereby to provide for freedom of play of the neck in the socket opening and flexibility in the junction between each pair of adjacent bead members said beads being formed of polyethylene.

4. In a stringless necklace, a chain comprising a plurality of at least four bead members formed of resilient synthetic plastic material having the resilient properties of polyethylene, each pair of adjacent bead members being connected to each other by a ball and socket joint, a first of each pair of said adjacent bead members having an extension in the form of a neck extending from a surface thereof facing the other adjacent bead member, said neck having a head adjacent the outer end thereof, the facing surface of said other adjacent bead member having a socket opening for detachably receiving and retaining the head of the first bead member, said socket opening including a mouth which is of smaller cross-sectional area than the interior portion of said socket opening, said head being larger in cross sectional area than the mouth of said socket opening whereby such head will not ordinarily pass through the mouth of a socket opening but due to the resilience of said plastic material may be forced therethrough with a snap action to provide a relatively secure but easily disconnected junction between adjacent beads, said head being smaller than the interior portion of said socket opening and the neck on said bead member in the region adjacent the head being smaller in cross sectional area than said mouth whereby to provide for freedom of play of the neck in the socket opening and flexibility in the junction between each pair of adjacent bead members at least one of the bead members having at least two socket openings therein.

5. In a stringless necklace, a chain comprising a plurality of at least four bead members formed of resilient synthetic plastic material having the resilient properties of polyethylene, each pair of adjacent bead members being connected to each other by a ball and socket joint, a first of each pair of said adjacent bead members having an extension in the form of a neck extending from a surface thereof facing the other adjacent bead member, said neck having a head adjacent the outer end thereof,

6

the facing surface of said other adjacent bead member having a socket opening for detachably receiving and retaining the head of the first bead member, said socket opening including a mouth which is of smaller cross-sectional area than the interior portion of said socket opening, said head being larger in cross sectional area than the mouth of said socket opening whereby such head will not ordinarily pass through the mouth of a socket opening but due to the resilience of said plastic material may be forced therethrough with a snap action to provide a relatively secure but easily disconnected junction between adjacent beads, said head being smaller than the interior portion of said socket opening and the neck on said bead member in the region adjacent the head being smaller in cross sectional area than said mouth whereby to provide for freedom of play of the neck in the socket opening and flexibility in the junction between each pair of adjacent bead members at least one of said bead members comprising a plurality of bead elements integrally connected to each other, the opposite ends of the last mentioned one bead member being connected to adjacent bead members by said ball and socket joints.

6. In a stringless necklace, a chain comprising a plurality of at least four bead members formed of resilient synthetic plastic material having the resilient properties of polyethylene, each pair of adjacent bead members being connected to each other by a ball and socket joint, a first of each pair of said adjacent bead members having an extension in the form of a neck extending from a surface thereof facing the other adjacent bead member, said neck having a head adjacent the outer end thereof, the facing surface of said other adjacent bead member having a socket opening for detachably receiving and retaining the head of the first bead member, said socket opening including a mouth which is of smaller cross-sectional area than the interior portion of said socket opening, said head being larger in cross sectional area than the mouth of said socket opening whereby such head will not ordinarily pass through the mouth of a socket opening but due to the resilience of said plastic material may be forced therethrough with a snap action to provide a relatively secure but easily disconnected junction between adjacent beads, said head being smaller than the interior portion of said socket opening and the neck on said bead member in the region adjacent the head being smaller in cross sectional area than said mouth whereby to provide for freedom of play of the neck in the socket opening and flexibility in the junction between each pair of adjacent bead members said bead members are made of polyethylene, the heads of said extensions being of generally spherical form, the said mouths of said socket openings being spaced inwardly from the external surface of the bead member and being connected to said external surface by an inwardly converging passage to facilitate assembly of the beads.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

|           |                      |                |
|-----------|----------------------|----------------|
| 1,468,612 | Johnson et al. ----- | Sept. 18, 1923 |
| 1,797,968 | Sweeney -----        | Mar. 24, 1931  |
| 2,582,553 | McMurtrie -----      | Jan. 15, 1952  |
| 2,656,578 | Tworek -----         | Oct. 27, 1953  |
| 2,662,335 | Calverley -----      | Dec. 15, 1953  |
| 2,688,202 | O'Neill -----        | Sept. 7, 1954  |

##### FOREIGN PATENTS

|         |                     |               |
|---------|---------------------|---------------|
| 520,027 | Germany -----       | Aug. 9, 1929  |
| 216,671 | Great Britain ----- | June 5, 1924  |
| 490,470 | Great Britain ----- | Aug. 15, 1938 |
| 597,762 | Great Britain ----- | Feb. 3, 1948  |
| 625,357 | Great Britain ----- | June 27, 1949 |
| 676,144 | Great Britain ----- | July 23, 1952 |