The injector 1 comprises a main body 2, which is generally hollow and elongate. At a first, forward end of the main body 2 a first, narrowed neck 3 is formed, having an egress aperture 4 formed at its end. Inclined screw threads 5 are formed on an external surface of the first neck 3.

At a second, rear end of the main body 2 a second, preferably wider neck 6 is formed defining a rear aperture 7 of the main body 2. The second neck 6 also has screw threads formed on its outer surface.

In cross-section, the internal chamber defined by the main body 2 is substantially circular in shape. The external cross-sectional shape of the main body 2 may be any suitable shape and, in the depicted embodiment, is generally hexagonal. An external cross-sectional shape such as a hexagon ensures that the main body 2 may be handled, tightened and loosened easily during use.

A delivery nozzle 8 includes a cup-shaped engagement portion 9 having an internal threaded surface, which is adapted to be matingly engaged with the screw threads 5 formed on the external surface of the first neck 3 of the main body 2.

Extending from the engagement portion 9 is a delivery conduit 10, which terminates in a substantially planar positioning plate 11, which is generally perpendicular to the main axis of the delivery conduit 10. A fluid path is defined from the interior of the engagement portion 9, through the delivery conduit 10 and out through a delivery aperture 12 formed roughly in the centre of the positioning plate 11.

In preferred embodiments a ring seal 13 is provided to help ensure that the threaded engagement between the main body 2 and the delivery nozzle 8 is fluid-tight.

Claims:

1. A apparatus for ejecting a fluid substance, the apparatus comprising:

a housing having an internal cavity, the cavity having a first end and a second end;

a divider located within the cavity and between the first and second ends thereof, the divider dividing the cavity into first and second chambers;

an introduction arrangement for introducing fluid into the first chamber;

a compression element located in the second chamber, between the divider and the second end of the chamber, the compression element being of sufficient size that, when the divider is within a first distance from the second end of the housing, the compression element is placed under compression along a compression axis between the divider and the second end of the housing, the compression element taking the form of a substantially solid, elongate member formed from a resilient material, wherein the compression element has a first end and a second end and, in a substantially uncompressed state, occupies substantially every point along at least one axis that is parallel with the compression axis; and

an ejection arrangement to allow ejection of fluid from the first chamber out of the apparatus.

2. An apparatus according to claim 1 wherein the compression element takes the form of a substantially solid, elongate peripheral wall having a hollow internal core.

3. An apparatus according to claim 1 or 2 wherein the compression element is formed from a silicone material.

4. An apparatus according to any preceding claim wherein the introduction arrangement comprises a shaft passing through the second chamber.

5. An apparatus according to claim 4 wherein the compression element is formed at least partly around the shaft.

6. An apparatus according to any preceding claim wherein two or more compression elements are provided within the second chamber.

7. An apparatus according to claim 6 wherein the two compression elements are formed from materials having different elastic moduli.

8. An apparatus according to any preceding claim, wherein the ejection arrangement comprises a fluid conduit passing from the first chamber to a delivery nozzle.

9. An apparatus according to claim 8, wherein the ejection arrangement comprises an elongate delivery member with an egress aperture at or near its distal end.

10. An apparatus according to claim 9, wherein the elongate delivery member comprises a needle.

11. An apparatus according to claim 9 or 10, wherein the egress aperture is provided on a side surface of the elongate delivery member.

12. An apparatus according to any preceding claim, wherein the divider is coloured, or otherwise formed to be easy to identify visually, compared to surrounding components.

13. An apparatus according to any preceding claim wherein all or substantially all of the components making up the injector are recyclable.

14. A kit comprising an apparatus according to any preceding claim, along with at least further compression element, the or each further compression element being interchangeable with the compression element.

15. A kit according to claim 14, wherein the or each further compression element has a different elastic modulus, or is differently-sized in at least one dimension, to the compression element.

16. A kit according to claim 14 or 15, wherein the compression element and the or each further compression element has a visual identifier relating to its properties.

17. A kit according to claim 16, wherein the compression element and the or each further compression element is colour-coded.

18. A method of ejecting a fluid, comprising the steps of:

providing an apparatus according to any preceding claim;

introducing pressurised fluid into the first chamber via the introduction arrangement, so that the compression element is compressed; and

ejecting the fluid, via the ejection arrangement, at least partly through an ejection force exerted by the compression element.

19. An apparatus substantially as hereinbefore described, with reference to the accompanying drawings.

20. A method substantially as hereinbefore described, with reference to the accompanying drawings.

The injector 1 comprises a housing of main body 2, which is generally hollow and elongate. At a first, forward end of the main body 2 a first, narrowed neck 3 is formed, having an egress aperture 4 formed at its end. Inclined screw threads 5 are formed on an external surface of the first neck 3.

At a second, rear end of the main body 2 a second, preferably wider neck 6 is formed defining a rear aperture 7 of the main body 2. The second neck 6 also has screw threads formed on its outer surface.

In cross-section, the internal chamber defined by the main body 2 is substantially circular in shape. The external cross-sectional shape of the main body 2 may be any suitable shape and, in the depicted embodiment, is generally hexagonal. An external cross-sectional shape such as a hexagon ensures that the main body 2 may be handled, tightened and loosened easily during use.

A delivery nozzle 8 includes a cup-shaped engagement portion 9 having an internal threaded surface, which is adapted to be matingly engaged with the screw threads 5 formed on the external surface of the first neck 3 of the main body 2.

Extending from the engagement portion 9 is a delivery conduit 10, which terminates in a substantially planar positioning plate 11, which is generally perpendicular to the main axis of the delivery conduit 10. A fluid path is defined from the interior of the engagement portion 9, through the delivery conduit 10 and out through a delivery aperture 12 formed roughly in the centre of the positioning plate 11.

Claims:

1. An injector for ejecting a fluid substance, the apparatus comprising:

a housing having an internal cavity, the cavity having a first end and a second end;

a pushing plate located within the cavity and between the first and second ends thereof, the pushing plate defining a fluid chamber within the cavity substantially towards the first end;

a shaft passing through the internal cavity for introducing fluid into the fluid chamber;

a compression element located in the internal cavity, towards the second end of the internal cavity, wherein, the compression element is of a size that, when the pushing plate is within a first distance from the second end of the housing, the compression element is placed under compression along a compression axis between the pushing plate and the second end of the housing, the compression element taking the form of a substantially solid, elongate member formed from a resilient material, wherein the compression element has a first end and a second end and, in a substantially uncompressed state, occupies substantially every point along at least one axis that is parallel with the compression axis; and

an ejection arrangement to allow ejection of fluid from the first chamber out of the apparatus.

2. The injector according to claim 1 wherein the compression element takes the form of a substantially solid, elongate peripheral wall having a hollow internal core.

3. The injector according to claim 1 or 2 wherein the compression element is formed from a silicone material.

4. The injector according to any preceding claim, wherein the compression element is formed at least partly around the shaft.

5. The injector to any preceding claim wherein two or more compression elements are provided within the cavity.

6. The injector according to claim 5 wherein the two compression elements are formed from materials having different elastic moduli.

7. The injector according to any preceding claim, wherein the ejection arrangement comprises a fluid conduit passing from the fluid chamber to a delivery nozzle.

8. The injector according to claim 7, wherein the ejection arrangement comprises an elongate delivery member with an egress aperture at or near its distal end.

9. The injector according to claim 8, wherein the elongate delivery member comprises a needle.

10. The injector according to claim 8 or 9, wherein the egress aperture is provided on a side surface of the elongate delivery member.

11. The injector according to any preceding claim, wherein the pushing plate is coloured, or otherwise formed to be easy to identify visually, compared to surrounding components.

12. The injector according to any preceding claim wherein all or substantially all of the components making up the injector are recyclable.

13. A kit comprising an apparatus according to any preceding claim, along with at least further compression element, the or each further compression element being interchangeable with the compression element.

14. A kit according to claim 13, wherein the or each further compression element has a different elastic modulus, or is differently-sized in at least one dimension, to the compression element.

15. A kit according to claim 13 or 14, wherein the compression element and the or each further compression element has a visual identifier relating to its properties.

16. A kit according to claim 15, wherein the compression element and the or each further compression element is colour-coded.

17. A method of ejecting a fluid, comprising the steps of:

providing an apparatus according to any preceding claim;

introducing pressurised fluid into the first chamber via the shaft, so that the compression element is compressed; and

ejecting the fluid, via the ejection arrangement, at least partly through an ejection force exerted by the compression element.