

-1-

CABLE CLAMPING APPARATUS

The present invention relates to a clamping apparatus,
and relates particularly, but not exclusively, to a cable
5 clamping apparatus for incorporation in a cable gland.

Cable glands are used to mount cables to an enclosure,
and generally have a gland body having an external screw
threaded part for mounting to a threaded aperture in an
10 enclosure, or to a threaded locking plate located on the
opposite side of the aperture. The gland body is formed from
two or more parts defining an aperture through which a cable
passes, and one or more seals are located in the gland body
for sealing against an external surface of the cable.

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A clamping apparatus for use in such a cable gland is
disclosed in WO 2016/000901, in which clamping members are
pivotably mounted so that they can pivot into clamping
engagement with a cable passing through the cable gland.

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This known clamping apparatus has a number of potential
limitations. Firstly, the pivotable clamping members are
formed with pivot pins, which are pivotably located in
apertures in the parts to which they are mounted. These pivot
25 pins and apertures are difficult to construct robustly, as a
result of which the pivot pins can bend or flex. Also, the
presence of apertures in parts which receive the pivot pins
limits the extent to which the clamping apparatus can be
constructed compactly.

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A further clamping apparatus for a cable gland is
disclosed in US 4608454, in which gripping dogs are moved
into clamping contact with a cable by means of engagement of

-2-

the gripping dogs with surfaces inclined relative to a longitudinal axis of a cable passing through the cable gland. However, this arrangement suffers from the drawback that the area of contact between the gripping dogs and the cable is limited, as a result of which there is a risk of damage to the cable for a given applied clamping force.

Preferred embodiments of the present invention seek to overcome one or more of the above disadvantages of the prior art.

According to an aspect of the present invention, there is provided a clamping apparatus for clamping an elongate object, the apparatus comprising:

15 a housing defining a first aperture therethrough for enabling an elongate object to extend through said apparatus; actuator means; and

a plurality of clamping members adapted to slidably engage said actuator means;

20 wherein said actuator means and said clamping members are adapted to be arranged in said housing such that movement of said clamping members relative to said actuator means, in an axial direction of an elongate object extending through said apparatus, causes sliding movement of said clamping members relative to said actuator means between at least one first condition, in which said elongate object can move in said axial direction relative to said clamping members, and at least one second condition, in which said elongate object is clamped between said clamping members, and wherein a plurality of said clamping members are adapted to overlap in said axial direction.

-3-

By providing actuator means and clamping members arranged such that movement of the clamping members relative to the actuator means causes sliding movement of the clamping members relative to the actuator means between at least one
5 first condition, in which the elongate object can move axially relative to the clamping members, and at least one second condition, in which the elongate object is clamped between said clamping members, this provides a number of advantages. Firstly, the necessity of manufacturing pivot
10 pins, which could bend or flex, or components having apertures to receive the pivot pins, is avoided, which provides the advantage of enabling the apparatus to be made more robust and more compact. In addition, the range of diameters of elongate objects such as cables which can be
15 clamped by the clamping apparatus can be wide, since the distance over which the clamping members slide axially relative to the clamping means can be large. In addition, the apparatus can be constructed such that tension in the elongate object urges the clamping members axially relative
20 to the actuator means in an axial direction which causes an increase in clamping force applied by the clamping members, thereby improving pull-out resistance, and thus reliability, of the apparatus. Also, by providing clamping members which are adapted to overlap in the axial direction, this provides
25 the advantage of enabling the entire circumference of the elongate object to be surrounded by clamping members, thereby enabling the area over which a given clamping force is applied to be maximised, and reducing the risk of damage to the elongate object and maximising the effectiveness of
30 gripping. In the case of the elongate object being a cable, the ability to provide electrically conductive clamping members which contact the entire circumference of the cable provides the further advantage of providing more effective

-4-

EMC (electromagnetic compatibility) screening, thereby minimising the effect of electromagnetic noise on apparatus connected to the cable. In addition, in the case of electrically conductive clamping members, by providing
5 clamping members which pivot relative to the body, this enables the clamping members to be made of large cross sectional area, since the clamping members do not need to be flexible, thereby providing the advantage that the clamping members can be used to form a more effective path for fault
10 current to pass from the cable to earth, thereby improving the safety of operation of the apparatus.

The actuator means may comprise a plurality of first engaging surfaces, and a plurality of said clamping members
15 may each comprise a respective second engaging surface, adapted to engage a respective said first engaging surface, such that said movement of said plurality of clamping members relative to said actuator means, in an axial direction of an elongate object extending through said apparatus, causes
20 radial movement of said plurality of clamping members relative to said actuating means.

The apparatus may comprise a first plurality of said first engaging surfaces and a second plurality of said first
25 engaging surfaces, and the apparatus may comprise a first plurality of said clamping members having a first plurality of said second engaging surfaces, adapted to engage said first plurality of said first engaging surfaces, and a second plurality of said clamping members having a second plurality
30 of said second engaging surfaces, adapted to engage said second plurality of said first engaging surfaces.

-5-

This provides the advantage of enabling a compact construction of clamping apparatus which can simultaneously clamp sheathed and unsheathed parts of an elongate object.

5 The actuator means may comprise a first actuator member, having said first plurality of first engaging surfaces, and a second actuator member, having said second plurality of first engaging surfaces.

10 This provides the advantage of enabling a wide range of different cable glands to be easily manufactured.

15 A plurality of said first and/or second engaging surfaces may be inclined relative to an axial direction of an elongate object extending through said housing.

20 A plurality of said first engaging surfaces may be provided on respective protrusions on said actuator means, and a plurality of said second engaging surfaces may be provided on respective recesses in said clamping members, wherein said recesses are located radially inwards of said protrusions in use.

25 This provides the advantage of causing the actuator member to act to hold the clamping members together, thereby improving the stability of the apparatus.

30 A plurality of said clamping members may each be adapted to slidably engage a pair of further said clamping members arranged adjacent thereto when moving between a said first condition and a said second condition.

-6-

This provides the advantage of enabling an elongate object to be completely surrounded by clamping members, thereby maximising the area over which a clamping force is applied. This in turn enables a larger total clamping force to be applied, thereby improving the reliability of the apparatus. In the case of the elongate object being a cable and the clamping members being electrically conductive, this provides the further advantage of better EMC screening.

10 A plurality of said clamping members may each have a respective first engaging portion, adapted to slidingly engage a further said clamping member adjacent thereto radially outwards of said further clamping member, and a respective second engaging portion, adapted to slidingly
15 engage said further clamping member radially inwards of said further clamping member.

This provides the advantage of improving the stability and reliability of the apparatus.

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At least one said first engaging portion may have a respective first radially extending surface adapted to engage a second radially extending surface of a said second engaging portion of a further said clamping member.

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This provides the advantage of providing axial support to the clamping members, thereby improving stability of the apparatus.

30 The apparatus may further comprise engaging means for preventing axial movement of a pair of adjacent said clamping members relative to each other.

-7-

This provides the advantage of making assembly of the apparatus easier and making operation of the apparatus more reliable by minimising the risk of mis-alignment of the clamping members relative to each other and/or relative to
5 the housing.

The engaging means may comprise at least one protrusion on a said clamping member of said pair and at least one recess of the other said clamping member of said pair for
10 slidably receiving a respective said protrusion.

The housing may comprise a first body part having a second aperture therethrough for receiving said elongate object, and a second body part having a third aperture
15 therethrough for receiving said elongate object, and adapted to be mounted to said first body part, wherein said second and third apertures define said first aperture.

The second body part may be adapted to engage said
20 first body part to cause axial movement of said clamping members relative to said actuator means.

At least one said clamping member may include at least one sheath penetrating portion adapted to penetrate a sheath
25 of an elongate object passing through the apparatus.

This provides the advantage of enabling an earthing connection to be made to the elongate object, for example a cable (for example to a conductive sheath inside the
30 penetrated sheath) at the same time as the elongate object is clamped.

-8-

At least one said sheath penetrating portion may comprise at least one spike.

The apparatus may further comprise biasing means for
5 biasing a plurality of said clamping members towards said first condition.

This provides the advantage of making the apparatus easier to assemble, while also enabling the apparatus to be
10 more easily inspected when a cable is absent.

The biasing means may comprise at least one biasing member adapted to engage a respective said clamping member and said actuator means.
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At least one said biasing member may comprise a respective resilient annular member.

At least one said clamping member may be electrically
20 conductive.

This provides the advantage of simplifying construction of the apparatus.

25 The apparatus may be adapted to clamp a cable.

According to another aspect of the present invention, there is provided a cable gland including a clamping apparatus as defined above.

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Preferred embodiments of the invention will now be described, by way of example only and not in any limitative sense, with reference to the accompanying drawings, in which:

Figure 1 is a perspective partially cut away view of a cable gland of a first embodiment of the present invention;

Figure 2 is an exploded view of the cable gland of
5 Figure 1;

Figure 3 is a perspective partially cut away view of a cable gland of a second embodiment of the present invention;

Figure 4 is an exploded view of the cable gland of
Figure 3;

10 Figure 5 is a perspective partially cut away view of a cable gland of a third embodiment of the present invention;

Figure 6 is an exploded view of the cable gland of
Figure 5;

Figure 7 is a perspective partially cut away view of
15 the cable gland of Figure 5 mounted to a cable;

Figure 8 is a perspective view of a cable gland of a fourth embodiment of the present invention;

Figure 9 is a perspective partially cut away view of the cable gland of Figure 8;

20 Figure 10 is a partially cut away exploded view of the cable gland of Figure 8;

Figure 11 is an exploded view of the clamping apparatus of the cable gland of Figure 8;

Figure 12 is a perspective partially cut away view of a
25 cable gland of a fifth embodiment of the present invention;

Figure 13 is a perspective partially cut away view of the cable gland of Figure 12, with the clamping apparatus also partially cut away;

Figure 14 is an exploded perspective view of the cable
30 gland of Figure 12;

Figure 15 is an exploded perspective view of the clamping apparatus of the cable gland of Figure 14;

-10-

Figure 16 is a further exploded perspective view of the clamping apparatus of Figure 15;

Figure 17 is a perspective partially cut away view of a cable gland of a sixth embodiment of the present invention;

5 and

Figure 18 is an exploded perspective view of the cable gland of Figure 17.

Referring to Figures 1 and 2, a cable gland 2 of a first
10 embodiment of the present invention includes a clamping
apparatus having a housing 4 defining a first aperture 6
therethrough for receiving an elongate object in the form of
a cable 50 (Figure 7). The housing 4 includes a first body
part 8 having a second aperture 10 therethrough for receiving
15 the cable, and a second body part 12 having a third aperture
14 therethrough for receiving the cable. The first body part
8 has an external screw thread 16 for engaging an internal
screw thread 18 on the second body part 12. The second body
part 12 also has an external screw thread 20 for engaging an
20 enclosure (not shown) to which the cable gland 2 is to be
mounted. Engagement of the screw thread 16 of the first body
part 8 with the screw thread 18 of the second body part 12
causes axial movement of the first body part 8 and second
body part 12 relative to each other.

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Three generally equiangularly arranged clamping members
22 are slidably mounted to each other within the housing 4 so
as to surround a cable extending through the housing 4. The
clamping members engage actuator means in the form of an
30 annular actuator member 24 having an aperture 26 to enable
the cable to extend therethrough and having equiangularly
arranged protrusions 28 extending from a first end face of
the actuator member 24. The clamping members can be made of a

-11-

wide range of materials, for example plastics, or electrically conductive material if the clamping members are intended to form an earthing connection for the cable.

- 5 Each protrusion 28 is provided with a respective first engaging surface in the form of a first inclined surface 30, which slidably engages a corresponding second engaging surface in the form of a second inclined surface 32 provided in a respective recess 34 in one of the clamping members 22.
- 10 Axial movement of the first inclined surfaces 30 of the clamping members 22 over the second inclined surfaces 32 of the protrusions 28 on the actuator member 24 causes the clamping members 22 to slidably engage each other and move radially inwards or outwards relative to the cable extending
- 15 through the housing 4, in dependence on the direction of axial movement.

Each clamping member 22 slidably engages one of the other two clamping members 22 at each of its ends via a first engaging

20 portion having an inner surface 36 slidably engaging a corresponding second engaging portion having an outer surface 38 on the adjacent clamping member 22. In this way, each clamping member 22 is supported on radially inner and outer surfaces of its ends by each of its neighbouring clamping

25 members 22, providing stability as the clamping members 22 slide radially inwards or outwards as the second inclined surfaces 32 of the clamping members 22 slide along the first inclined surfaces 30 on the actuator member 24. In addition, each clamping member 22 has a first radially extending

30 surface 40 facing away from the actuator member 24, for engaging a second radially extending surface 42 facing towards the actuator member 24, so that the clamping members 22 also provide support to each other in an axial direction.

-12-

In this way, adjacent pairs of clamping members 22 overlap in the axial direction of a cable passing through the cable gland 2, thereby enabling the clamping members 22 to move relative to each other while surrounding the entire
5 circumference of the cable. This in turn enables the area over which a given gripping force is applied to the cable to be maximised, thereby minimising the risk of damage to the cable, and enabling a larger gripping force to be applied.

10 The operation of the cable gland 2 and clamping apparatus shown in Figures 1 and 2 will now be described. A cable is inserted through the clamping apparatus 2 so that it extends through the first 8 and second 12 body parts and the actuator member 24, and is surrounded by the clamping members
15 22. The clamping members 22 are initially sufficiently spaced from the longitudinal axis of the clamping apparatus 2 to enable insertion of the cable. The first 8 and second 12 body parts are arranged relative to each other such that the ends of the clamping members 22 facing away from the first
20 body part 8 abut an inner radial surface 44 of the second body part 12, and the end face of the actuator member 24 facing away from the second body part 12 abuts a flange 46 on the first body part 8 arranged outwards of the screw thread 16 on the first body part 8.

25 Further threaded engagement of the first body part 8 with the second body part 12 moves the flange 46 and inner radial surface 44 towards each other, which causes sliding movement of the second inclined surfaces 32 of the clamping
30 members 22 along the first inclined surfaces 30 of the actuator member 24. This in turn causes the clamping members 22 to slidably engage each other and move towards the

-13-

longitudinal axis of the cable, until the clamping members 22 are brought into clamping engagement with the cable.

An attempt to pull the cable out of the housing 4 causes the clamping members 22 to further slide along the first inclined surfaces 30 on the actuator member 24, thereby moving the clamping members 22 further radially inwards and increasing the clamping force applied to the cable.

Referring to Figures 3 and 4, in which parts common to the embodiment of Figures 1 and 2 are denoted by like reference numerals but increased by 100, a cable gland 102 of a second embodiment of the present invention is shown. Actuator member 124 is provided with a first set of protrusions 128a on a first end face thereof, and a second set of protrusions 128b on a second end face thereof. The first 128a and second 128b sets of protrusions engage respective first 122a and second 122b sets of clamping members, arranged on opposite sides of the actuator member 124 so that each set of clamping members 122a, 122b can clamp a cable extending through the housing. For example, the first set of clamping members 122a can engage the cable at a location where an external sheath of the cable has been removed, and the second set of clamping members 122b can engage the sheath of the cable where it has not been removed. In addition, the second clamping members 122b are provided with sheath penetrating portions in the form of spikes 123, for penetrating an outer sheath 60 (Figure 7) of a cable 50. This enables the clamping members 122b to simultaneously grip the cable 50 and form an earthing connection with a conductive sheath (not shown) of the cable 50.

-14-

An insert 148 has a split cylindrical body 149 and an end flange 150. The split cylindrical body 149 enables the insert 148 to be radially compressed, so that it can be located within the second body part 112 so that the flange 150 abuts a stepped surface 151 on the second body part 112 to enable the internal screw thread 116 on the first body part 108 to engage the external screw thread 114 on the second body part 112. The end flange 150 provides an abutment surface for end faces 152b of the second clamping members 122b facing away from the actuator member 124. End faces 152a of the first clamping members 122a facing away from the actuator member 124 abut a radially inner surface 144 of second body part 112, and movement of the first body part 108 towards the second body part 112 is achieved by threaded engagement of internal screw thread 116 on the first body part 108 with external screw thread 114 on the second body part 112.

Referring to Figures 5 to 7, in which parts common to the embodiment of Figures 3 and 4 are denoted by like reference numerals but increased by 100, a cable gland 202 of a third embodiment of the present invention is shown. Cable 50 has electrically conductive cores 54, an inner protective sheath 56, electrically conductive armouring 58 and outer protective sheath 60. A resilient split ring 248 is radially compressible to enable it to be located within an end of second body member 212 and to abut an end face of first body member 208. The split ring 248 forms an abutment surface for end faces 252b of second clamping members 222b facing away from actuator member 224.

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The operation of the cable gland 202 will now be described.

-15-

The cable 50 is treated to expose the inner cores 54, inner sheath 56, conductive armour 8 and outer sheath 60 as shown in Figure 7, and the cable is then inserted through the cable gland 202 so that first clamping members 222a are
5 located adjacent the conductive sheath 58 and the second clamping members 222b are located adjacent the outer sheath 60. The clamping members 222a, 222b and actuator member 224 are located inside the second body part 212, and the split ring 248 is radially compressed and located in an end of the
10 second body part 212 inwards of internal screw thread 214 of the second body part 212. External screw thread 216 on first body part 208 is then mounted to the internal screw thread 214 and threaded engagement of screw threads 214, 216 causes the first 208 and second 212 body parts to move axially
15 towards each other. This in turn causes sliding movement of the clamping members 222a, 222b relative to the actuator member 224 to bring the clamping members 222a into clamping engagement with the conductive sheath 58 of cable 50 and the clamping members 222b into clamping engagement with the
20 external sheath 60 of the cable 50.

Figures 8 to 11 show a cable gland 302 of a fourth embodiment of the invention, in which parts common to the embodiment of Figures 1 and 2 are denoted by like reference
25 numerals but increased by 300. The cable gland 302 has first 308 and second 312 body parts which define a housing 304 containing clamping members 322 and actuator member 324. Each of the clamping members 322 is provided with a pair of generally cylindrical pegs 362 for abutting biasing means in
30 the form of a respective flexible metal biasing member 364. Each biasing member 364 is flexed to engage a respective pair of pegs 362 of a respective clamping member 322 and a respective protrusion 328 of the actuator member 324, to bias

-16-

the clamping members 322 radially outwards relative to the actuator member 324. In this way, as the first 308 and second 312 body parts are moved apart, the biasing members 364 urge the clamping members 322 radially outwards.

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As shown in more detail in Figure 11, each of the clamping members 322 is also provided with engaging means in the form of a protrusion 366 at one end of the clamping member 322 and a recess 368 at the other end of the clamping member 322 for slidably receiving a protrusion 366 on another clamping member 322. Engagement of the protrusion 366 of one clamping member 322 in a corresponding recess 368 of an adjacent clamping member 322 prevents axial separation of the clamping members 322, which in turn assists assembly of the cable gland 302 and its reliability of operation.

Referring to Figures 12 to 16, in which parts common to the embodiment of Figures 8 to 11 are denoted by like reference numerals but increased by 100, a cable gland 402 of a fifth embodiment of the invention is shown. The cable gland 402 has first 408 and second 412 body parts, clamping members 422 and actuator member 424. Each of the clamping members 422 is provided with a protrusion 470 which extends through an aperture 472 in and engages a respective slot 474 in an earthing plate 476, which limits the extent to which the clamping members 422 can move radially outwards. Biasing means in the form of a resilient biasing member 464 in the form of an annular resilient member of suitable material such as elastomer or spring steel has convex parts 478 which engage respective grooves 480 on protrusions 482 of a support plate 484, and concave parts 486, each of which engages a respective groove 471 on a protrusion 470 on one of the clamping members 422 and urges the clamping members radially

-17-

outwards. As the first 408 and second 412 body parts are moved towards each other as a result of threaded engagement of the first 408 and second 412 body parts with each other, engagement of the clamping members 422 with the actuator member 424 causes the clamping members 422 to move radially inwards against the action of the biasing member 464. When the first 408 and second 412 body parts are moved away from each other as a result of threaded engagement of the first 408 and second 412 body parts with each other, the clamping members 422 are urged radially outwards by the biasing member 464.

Referring to Figures 17 and 18, in which parts common to the embodiment of Figures 12 to 16 are denoted by like reference numerals but increased by 100, a cable gland 502 of a sixth embodiment of the present invention is shown. The cable gland 502 has a first set of clamping members 522a having first protrusions 570a and engaging a first actuator member 524a, and second clamping members 522b having second protrusions 570b and engaging a second actuator member 524b, in a manner similar to the embodiment shown in Figures 5 to 7. The first clamping members 522a are urged radially outwards by means of a first biasing member 564a and the extent of radially outward movement of the first clamping members 522a is limited by engagement of the first protrusions 570a with notches 574 in an aperture 572 provided in an earthing plate 576. The second clamping members 522b are urged radially outwards by means of a second biasing member 564b, and radially outward movement of the second clamping members 522b is limited by engagement of the second protrusions 570b with slots 588 provided in an aperture 590 through a support plate 584.

-18-

It will be appreciated by persons skilled in the art that the above embodiments have been described by way of example only and not in any limitative sense, and that various alterations and modifications are possible without
5 departure from the scope of the invention as defined by the appended claims.

CLAIMS

1. A clamping apparatus for clamping an elongate object, the apparatus comprising:

5 a housing defining a first aperture therethrough for enabling an elongate object to extend through said apparatus, wherein the housing comprises a first body part having a second aperture therethrough for receiving said elongate object, and a second body part having a third aperture
10 therethrough for receiving said elongate object, wherein the second body part is adapted to be mounted to said first body part, and wherein said second and third apertures define said first aperture;

 actuator means arranged in said housing; and

15 a plurality of clamping members adapted to slidably engage said actuator means;

 wherein said clamping members are arranged in said housing and the second body part is adapted to engage said first body part to cause movement of said clamping members
20 relative to said actuator means, in an axial direction of an elongate object extending through said apparatus;

 wherein said movement of said clamping members relative to said actuator means causes sliding movement of said clamping members relative to said actuator means between at least one
25 first condition, in which said elongate object can move in said axial direction relative to said clamping members, and at least one second condition, in which said elongate object is clamped between said clamping members;

 wherein a plurality of said clamping members are each adapted
30 to slidably engage a pair of further said clamping members arranged adjacent thereto when moving between a said first condition and a said second condition;

 wherein a plurality of said clamping members overlap in said axial direction;

wherein said actuator means comprises a plurality of first engaging surfaces, and a plurality of said clamping members each comprise a respective second engaging surface, adapted to engage a respective said first engaging surface, such that
5 said movement of said plurality of clamping members relative to said actuator means, in said axial direction of an elongate object extending through said apparatus, causes radial movement of said plurality of clamping members relative to said actuating means;

10 wherein a plurality of said clamping members each has a respective first engaging portion, adapted to slidingly engage a further said clamping member adjacent thereto radially outwards of said further clamping member, and a respective second engaging portion, adapted to slidingly
15 engage said further clamping member radially inwards of said further clamping member; and

wherein at least one said first engaging portion has a respective first radially extending surface adapted to engage a second radially extending surface of a said second engaging
20 portion of a further said clamping member.

2. An apparatus according to claim 1, comprising a first plurality of said first engaging surfaces and a second plurality of said first engaging surfaces, and the apparatus comprises a first plurality of said clamping members having a first plurality of said second engaging surfaces, adapted to engage said first plurality of said first engaging surfaces, and a second plurality of said clamping members having a second plurality of said second engaging surfaces, adapted to engage said second plurality of said first engaging surfaces.

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3. An apparatus according to claim 2, wherein said actuator means comprises a first actuator member, having said first plurality of first engaging surfaces, and a second actuator member, having said second plurality of first engaging surfaces.

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4. An apparatus according to any one of the preceding claims, wherein a plurality of said first and/or second engaging surfaces are inclined relative to an axial direction of an elongate object extending through said housing.

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5. An apparatus according to any one of the preceding claims, wherein a plurality of said first engaging surfaces is provided on respective protrusions on said actuator means, and a plurality of said second engaging surfaces is provided on respective recesses in said clamping members, wherein said recesses are located radially inwards of said protrusions in use.

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6. An apparatus according to any one of the preceding claims, further comprising engaging means for preventing axial movement of a pair of adjacent said clamping members relative to each other.

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7. An apparatus according to claim 6, wherein the engaging means comprises at least one protrusion on a said clamping member of said pair and at least one recess of the other said clamping member of said pair for slidably receiving a

10 respective said protrusion.

8. An apparatus according to any one of the preceding claims, wherein at least one said clamping member includes at least one sheath penetrating portion adapted to penetrate a sheath of an elongate object passing through the apparatus.

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9. An apparatus according to claim 8, wherein at least one said sheath penetrating portion comprises at least one spike.

10. An apparatus according to any one of the preceding claims,
10 further comprising biasing means for biasing a plurality of said clamping members towards said first condition.

11. An apparatus according to claim 10, wherein the biasing
15 means comprises at least one biasing member adapted to engage a respective said clamping member and said actuator means.

12. An apparatus according to claim 11, wherein at least one said biasing member comprises a respective resilient annular
20 member.

13. An apparatus according to any one of the preceding claims, wherein at least one said clamping member is electrically conductive.

5 14. An apparatus according to any one of the preceding claims, wherein the apparatus is adapted to clamp a cable.

15. A cable gland including a clamping apparatus according to any one of the preceding claims.