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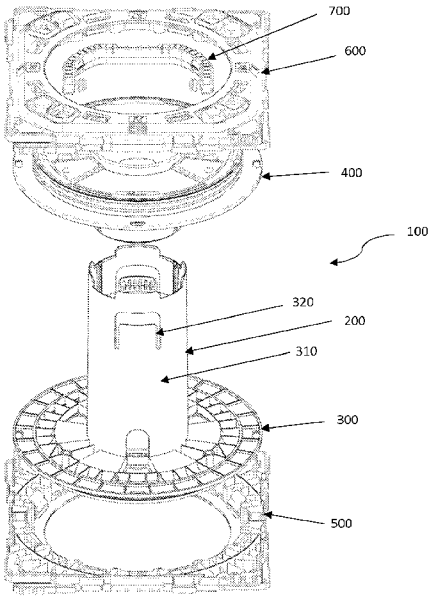

Figure 23

(57) Abstract: A cable or wire spool (100) includes a longitudinally extending barrel assembly (200) having a first circular flange (300). A first shaft portion (310) extends away from the first circular flange (300), the first shaft portion (310) having a first engagement formation (320). A second circular flange (400), a second shaft portion (410) extends away from the second circular flange (400), the second shaft portion (410) has a second engagement formation (420). A first end plate rotatably (500) is removably coupled to the first circular flange (300) and a second end plate (600) is rotatably and removably coupled to the second circular flange (400). The first engagement formation (320) is selectively engageable with the second engagement formation (420) to secure the first shaft portion (310) to the second shaft portion (410).

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CABLE OR WIRE SPOOL

Field of the invention

[0001] The present invention relates to the field of spools for cable or wire and in particular spools for storing and/or transporting and/or installing cable or wire. However, it will be appreciated by those skilled in the art that the spool may be applied in other fields of use.

Background

[0002] Any reference herein to known prior art does not, unless the contrary indication appears, constitute an admission that such prior art is commonly known by those skilled in the art to which the invention relates, at the priority date of this application.

[0003] Cables and wires are used in various applications such as power transmission, internet, data, telephone, fencing and other residential, commercial and agricultural uses. The present invention will be described in the context of cables or wires and the invention has application in respect of storing and/or transporting and/or installing cable or wire. However, it will be appreciated that it may also be applied in the context of conduits, hoses, wire ropes, chains, fabrics, and any other product that may be stored on a spool or drum prior to deployment.

[0004] Cables and wires are typically loaded onto spools after manufacture in lengths that enable the end user to unspool and cut some of the cable or wire as and when needed. The spool provides a transport and storage solution which serves several purposes. Primarily the reel maintains the cable in a neat and accessible format, allowing transportation and reducing the likelihood of cable tangles, and ensuring the cable is readily deployable when required.

[0005] The reels that are typically used, especially for small diameter cables such as power and data cables, are normally fabricated from plastic, having a central barrel and two opposing integrally formed flanges to retain the cable or wire on the barrel.

[0006] One or both of the flanges may be provided with a central hole for mounting the barrel on a shaft to facilitate controlled unspooling of the cable.

[0007] There are several disadvantages with existing cable spools. Firstly, the spool is not generally intended to be reused, meaning it is discarded after a single use.

Whilst the spool may be recyclable, depending on its polymer composition, in practice they are often discarded and not recycled, which is environmentally undesirable. Furthermore, because spools take up considerable "dead" space when transported for recycling, many tradespeople opt not to recycle and dispose of the empty spools directly in a skip bin or other such landfill. Even when disposed in landfill, the empty spools are still problematic, because they occupy a large volume in the bin, and construction waste in skip bins is often charged as a function of volume.

[0008] There are several other issues with existing cable spools. One issue with existing spools is that they tend to create much mess on the ground for installers when they unspool the cable. It is common for a user to unspool more cable than required, which must subsequently be respooled. It is also common for the cable to become tangled, and respooled coils are generally not evenly coiled on the spool, increasing the likelihood of further tangles occurring.

[0009] Prior to unspooling the cable is often mounted on an A-frame or other support structure, to enable the barrel to be horizontally orientated, and free to spin. This presents problems of "over-running" whereby the spool may rotate more than intended, due to the minimal friction. In practice, if a technician pulls the cable while mounted on an A-frame, a large volume of cable may become unspooled, and this may become tangled, and pose a hazard, for example a trip hazard, on a construction site.

Object of the Invention

[0010] It is an object of the invention to overcome or at least ameliorate one or more of the above disadvantages, or at least to provide a useful alternative.

Summary of the invention

[0011] The present invention provides a cable or wire spool comprising:

a longitudinally extending barrel assembly having:

a first circular flange;

a first shaft portion extending away from the first circular flange, the first shaft portion having a first engagement formation;

a second circular flange;

a second shaft portion extending away from the second circular flange, the second shaft portion having a second engagement formation;

a first end plate rotatably and removably coupled to the first circular flange;

a second end plate rotatably and removably coupled to the second circular flange;

wherein the first engagement formation is selectively engageable with the second engagement formation to secure the first shaft portion to the second shaft portion.

[0012] The first shaft portion is preferably engageable with the second shaft portion in two configurations:

a first configuration in which the first circular flange and the second circular flange are located at opposing ends of the barrel assembly; or

a second configuration in which the first shaft portion is inserted into an opening formed in the second circular flange such that the first shaft portion is inserted into a trailing end of the second shaft portion, and the first flanges is located adjacent to the second flange.

[0013] Preferably at least one of the first and second circular flanges includes at least one aperture providing a visual guide for evaluating a remaining length of cable or wire spooled on the barrel assembly.

[0014] The at least one aperture is preferably defined by a radially extending slot.

[0015] The cable or wire spool further preferably comprises one or more indicators adjacent to the at least one aperture, the indicators being positioned at locations corresponding with different approximate remaining lengths of a spooled cable or wire.

[0016] The first and second end plates preferably each have a polygonal profile when viewed in end view.

[0017] The first and second end plates preferably each have a generally square profile when viewed in end view.

[0018] Each corner and/or lateral outer surface of the first and second end plates preferably includes a friction pad.

[0019] The first and second end plates each may rest on a pair of heightening pads having an adjustable height.

[0020] Each heightening pad may comprise a removable piece adapted to be in contact with a resting surface, a wedge adapted to increase the height of the heightening pad and an insert piece arranged between the removable piece and the wedge.

[0021] At least one of the first and second end plates preferably includes a first interlock formation configured to interlock with another like end plate to enable two like cable or wire spools to be connected end to end having coaxial barrel assemblies.

[0022] The first interlock formation is preferably defined by at least one projection and at least one depression.

[0023] The first interlock formation is preferably defined by at least one projection and at least one depression at each of four corners of each end plate.

[0024] At least one of the first and second end plates preferably includes a second interlock formation configured to laterally interlock with another like end plate to enable two like cable or wire spools to be connected having parallel and offset barrel assemblies.

[0025] The second interlock formation is preferably defined by corresponding complementary male abutment formations and female abutment formations.

[0026] The male and female abutment formations are preferably defined by a series of ribs and spaces formed on a lateral surface of each of four sides of each end plate.

[0027] At least one of the first and second end plates preferably include a first interlock formation configured to interlock with another like end plate to enable two or more like cable or wire spools to be connected end to end with coaxial barrel assemblies; and

at least one of the first and second end plates include a second interlock formation configured to laterally interlock with another like end plate to enable two or more like cable or wire spools to be connected having parallel and offset barrel assemblies.

[0028] Each of the first and second circular flanges preferably includes an annular channel configured to receive a corresponding projection of one of the first and second end plates.

[0029] The projection preferably includes an inclined surface configured to urge against a portion of the first or second circular flange as the projection moves toward the annular channel.

[0030] Each of the first and second circular flanges preferably includes a carry handle moveable between an extended position and a concealed stowed position.

[0031] The carry handle is preferably spring biased toward the stowed position.

[0032] In a second aspect, the present invention provides a method of loading length of cable or wire onto a cable or wire spool, and subsequently dispensing the cable or wire, the spool having:

a longitudinally extending barrel assembly having:

a first circular flange, a first shaft portion extending away from the first circular flange, the first shaft portion having a first engagement formation;

a second circular flange, a second shaft portion extending away

from the second circular flange, the second shaft portion having a second engagement formation;

the method including the steps of:

a) loading the length of cable or wire on one of the first and second shaft portions;

b) engaging the first engagement formation with the second engagement formation to define a continuous shaft between the first and second circular flanges;

c) coupling a first end plate to the first circular flange;

d) coupling a second end plate to the second circular flange;

e) placing a flat edge of each of the first end plate and second end plate on a support surface; and

f) pulling a free end of the cable or wire to permit the barrel assembly to rotate relative to the first and second end plates.

Brief description of the drawings

[0033] The invention will now be described, by way of non-limiting example, with reference to the accompanying drawings, in which:

[0034] Figure 1 is a perspective view of a cable spool according to the invention;

[0035] Figure 2 is a partial perspective view of the cable spool of Figure 1 with the end plates removed;

[0036] Figure 3 is an exploded perspective view of a cable spool of an alternative embodiment;

[0037] Figure 4 is a side view of the cable spool of Figure 1 with the handle open;

[0038] Figure 5 is a side view of the cable spool of Figure 1 with the handle stowed;

[0039] Figure 6 is first end view of the cable spool of Figure 1;

[0040] Figure 7 is a second end view of the cable spool of Figure 1;

[0041] Figure 8 is a side view of the cable spool of Figure 1 with the cable removed;

[0042] Figure 9 is a side view of the cable spool of Figure 1 in a disassembled nested configuration;

[0043] Figure 10 is a side view of the cable spool of Figure 9 with the end plates removed;

[0044] Figure 11 is a perspective view of the cable spool of Figure 10;

[0045] Figure 12 is a perspective view of the cable spool of Figure 9;

[0046] Figure 13 is an inside view of one the flanges of the cable spool of Figure 1;

[0047] Figure 14 is a cross-sectional side view of the cable spool of Figure 1;

[0048] Figure 15 is a detail showing the engagement between the end plate and flange of the cable spool of Figure 1;

[0049] Figure 16 is an end view depicting two of the cable spools of Figure 1 stacked horizontally;

[0050] Figure 17 is a side view depicting two of the cable spools of Figure 1 stacked vertically;

[0051] Figure 18 is a side view depicting four of the cable spools of Figure 1 stacked horizontally and vertically;

[0052] Figure 19 is a perspective view depicting the arrangement of Figure 18;

[0053] Figure 20 is a partial cross-sectional view showing the engagement between two opposing shaft portions;

[0054] Figure 21 is a partial side view depicting a detail of a horizontal engagement feature;

[0055] Figure 22 is a perspective view of an alternative embodiment of the cable spool;

[0056] Fig. 23 is an exploded perspective view of the cable spool of Figure 1;

[0057] Fig. 24 is a schematic view of a particular embodiment in which the cable or wire spool rests on heightening pads; and

[0058] Fig. 25 is an exploded view of a heightening pad.

Detailed description

[0059] Referring to the figures, two embodiments of a cable or wire spool 100 are disclosed. In each embodiment, the spool 100 is reusable and provided having several separable parts. This enables a user to pull the spool 100 apart and load the

cable 50 onto the spool, and the volume occupied during transport and storage can be minimised. The cable or wire spool 100 is intended for cables 50, such as low voltage cables being 1.5 - 2 mm in outer diameter. In a preferred embodiment, the cable or wire spool 100 is sized to hold 100m of cable. However, it will be appreciated by those skilled in the art that the cable or wire spool 100 may be provided in different dimensions to accommodate different sizes and lengths of cable 50.

[0060] The cable or wire spool 100 is depicted assembled in the perspective view of Figure 1, and the cable or wire spool 100 is depicted in an exploded arrangement in Figure 23.

[0061] Referring to the second embodiment of Figure 3, the cable or wire spool 100 is depicted in an exploded arrangement. The wire spool 100 includes a longitudinally extending barrel assembly 200 having a first circular flange 300. The barrel assembly 200 can be used in isolation to store cable. The embodiment of the cable or wire spool 100 Figure 3 is operationally similar to the embodiment of Figure 1, with some differences described herein. Like reference numerals are used to denote like features.

[0062] A shaft of the barrel assembly 200 is provided in two parts, as depicted in figures 14 and20. A first shaft portion 310 extends away from the first circular flange 300. The first shaft portion 310 has a first engagement formation 320, seen for example in figures 8 to 12 or 20.

[0063] The cable or wire spool 100 includes a second circular flange 400. A second shaft portion 410 extends away from the second circular flange 400 and the second shaft portion 410 has a second engagement formation 420, as seem in Figure 8 or 20. The first and second engagement formations 320, 420 are defined by a set of resiliently biased projections which extend into corresponding apertures. As depicted in the cross-sectional view of Figure 20, the resiliently biased projections are located on the shaft portion 410 which is seated externally, and have a radially inwardly facing barb 325. When the barb 325 is urged inwardly, it bites or holds the second engagement formation 420. This prevents the resiliently biased projections from becoming disengaged by contact with the spooled cable or wire.

[0064] As shown in Figure 20, when the spooled cable 50 applies a force against the first engagement formation 320 the cable 50 inhibits disengagement of the first and second engagement formations 320, 420.

[0065] The first engagement formation 320 is selectively engageable with the second engagement formation 420 to secure the first shaft portion 310 to the second shaft portion 410. It will be appreciated that alternative locking arrangements may be utilised to secure the first shaft portion 310 and the second shaft portion 410, such as a screw thread, bayonet fitting or clip connection.

[0066] In the embodiments depicted, the first shaft portion 310 is integrally formed with the first circular flange 300. Similarly, the second shaft portion 410 is integrally formed with the second circular flange 400.

[0067] Referring to Figure 23, the cable or wire spool 100 includes a first end plate 500 which is rotatably and removably coupled to the first circular flange 300. A second end plate 600 is rotatably and removably coupled to the second circular flange 400. The two end plates 500, 600 are identical.

[0068] The cable or wire spool 100 can be assembled in at least two distinct configurations. In a first operational configuration, the first circular flange 300 and the second circular flange 400 are located at opposing ends of the barrel assembly 200, such that the first shaft portion 310 and second shaft portion 410 define a single, continuous shaft, with the first and second flanges 300, 400 located at opposing ends. This configuration is used during cable storage and dispensing.

[0069] In a second configuration, the first shaft portion 310 is inserted into an opening formed in the second end plate 600 such that the first shaft portion 310 is inserted into a trailing end of the second shaft portion 410, and the first flange 500 is located adjacent to the second flange 600. This configuration is depicted for example in Figures 9 and 12. The second configuration has application in storage, transportation, recycling, and landfill. This is because the volume occupied is significantly less than required in the first configuration.

[0070] Referring to Figure 6, at least one of the first and second circular flanges 300, 400 includes at least one aperture 330 providing a visual guide for evaluating a

remaining length of cable 50 or wire spooled on the barrel assembly 200. In the embodiment depicted, the at least one aperture is defined by a radially extending slot. However, it will be appreciated that a single aperture 330 may be deployed, or alternatively two, three, four or more radially extending slots.

[0071] Referring to the embodiment of Figure 3, the first and second flanges 300, 400 include one or more indicators 340 adjacent to the at least one aperture 330, the indicators 340 being positioned at locations corresponding with different approximate remaining lengths of a spooled cable or wire. For example, the indicators 340 may identify when there is approximately 40, 60 or 80 metres of remaining cable 50 or wire. The indicators 340 are located on the inner, cable facing side of each of the first and second flanges 300, 400. In this manner, the indicators 340 located closest to outer most coil of cable or wire 50 provides a user with a guide to estimate the approximate remaining cable or wire 50 length.

[0072] Referring to Figures 6 and 7, the first and second end plates 500, 600 each have a polygonal profile when viewed in end view, and the first and second end plates 500, 600 each preferably have a generally square profile when viewed in end view.

[0073] As depicted in Figures 6 and 7, each corner and/or lateral outermost surface of the first and second end plates 500, 600 includes a friction pad 510. In use, when one of the sides of the first and second end plates 500, 600 is located on a support surface, the friction pads 510 provides slip resistance. This inhibits the cable or wire spool 100 from moving as the cable or wire 50 is unspooled, especially when the cable or wire spool 100 is operated on smooth surfaces, such as polished concrete. The friction pads 510 are provided in the form of rubber corners or edges which may be replaceable.

[0074] In a particular embodiment shown in Figure 24, the first and second end plates 500, 600 each rest on a pair of heightening pads 512 having an adjustable height. This makes it possible to use the cable or wire spool 100 even if the total diameter of the spooled quantity of cable or wire exceeds the maximum diameter for which the cable or wire spool 100 was initially configured.

[0075] The heightening pads 512 may either be part of the end plates 500, 600, or may be separate pieces fixed to the end plates 500, 600, either directly, or through two support plates, each of the support plates bearing a pair of heightening pads 512 and being fixed to one of the end plates 500, 600.

[0076] As shown in the exploded view of Figure 25, each heightening pad 512 comprises a housing 517, a removable piece 513 adapted to be in contact with any resting surface such as the ground, a wedge 514 adapted to increase the height of the heightening pad 512 and an insert piece 515 arranged between the removable piece 513 and the wedge 514, to fill in the empty space left by the removable piece 513 when the removable piece 513 is shifted by the wedge 514 to increase the height of the heightening pad 512.

[0077] The removable piece 513, the insert piece 515 and the wedge 514 are accommodated in the housing 517 and are fastened by means of an assembling element 516 such as a screw, which is inserted through the removable piece 513, the insert piece 515 and the wedge 514.

[0078] Due to the presence of the wedge 514, the removable piece 513 is shifted outwards of the housing 517, which increases the height of the heightening pad 512.

[0079] In case the heightening pads 512 are separate pieces adapted to be fixed to the end plates 500, 600 and in case there is a standard cable or wire spool equipped with four usual pads having a housing 517 and a removable piece 513, a heightening kit comprising four wedges 514, four insert pieces 515 and four assembling elements 516 may be proposed to the user.

[0080] Referring to the embodiment of Figure 3, at least one of the first and second end plates 500, 600 include a first interlock formation 620 configured to interlock with another like end plate to enable two like cable or wire spools 100 to be connected end to end with coaxial barrel assemblies, as depicted schematically in Figure 17. This arrangement allows the two wire spools 100 to be unspooled simultaneously. In practice, this occurs due to the relative rotation of the two wire spools 100 about a single lowermost end plate 600.

[0081] Stacking of two or more spools 100 in a vertical arrangement, as shown in Figure 17 enables vertical stacking in tight spaces.

[0082] As depicted in Figure 3, the first interlock 620 is defined by at least one projection 630 and at least one depression 640. In particular, the first interlock 620 is defined by at least one projection 630 and at least one depression 640 at each of four corners of each end plate 500, 600. However, it will be appreciated that other arrangements may be employed to facilitate the interlocking of the adjacent end plates 500, 600, two or more layers high.

[0083] In the embodiment of Figure 1 for example, the projections 630 and depressions 640 of the first interlock 620, defining corresponding male and female formations that can engage. For example, when two of the reels 100 are seated with one on top of the other, the engagement between the first interlock 620 provides a locking function, reducing the likelihood of the spools 100 moving relative to each other.

[0084] When the spools 100 are stacked horizontally, for example the two horizontal rows shown in Figure 19, the projections 630 and depressions 640 of the first interlock 620 are in abutment. In this configuration, the round spools 100 are spaced apart and will be permitted to unspool at different speeds, allowing the user to unspool a single cable or multiple, and enabling simultaneously unspooling of spools having different remaining lengths of cable or wire 50.

[0085] Figure 21 provides a partial cross-sectional detail of the engagement between two like end plates 500, 600. As described earlier, the first interlock 620 is defined by projections 630 and corresponding depressions 640. In addition, guide surfaces 632, 642 are provided to assist and improve the engagement. The guide surfaces 632, 642 are provided in the form of sloping surfaces, which are inclined relative to a longitudinal axis of the spool 100, enabling mating to occur and guide the projections 630 and corresponding depressions 640 into contact. The guide surfaces 632, 642 are formed around some or all of the perimeter of each of the projections 630 and corresponding depressions 640, as seen in Figure 22.

[0086] Referring to Figures 3 or 22, at least one of the first and second end plates 500, 600 also include a second interlock formation 650 configured to laterally interlock with another like end plate 500, 600 to enable two like cable or wire spools 100 to be connected having parallel and offset barrel assemblies. This arrangement

is shown for example in Figure 16. The second interlock 650 is defined by corresponding complementary male and female abutment formations 660, 670.

[0087] As seen in the embodiment of Figure 3, the male and female abutment formations 660, 670 are defined by a series of ribs and spaces formed on a lateral surface of each of four sides of each end plate 500, 600. However, it will be appreciated that other combinations of complimentary male and female formations may alternatively be used, which enable the stacking and nesting of the adjacent edges of two or more end plates 500, 600. In the embodiment of Figures 1 and 22, the male and female abutment formations 660, 670 have corners that are acute in angle, promoting locking abutment.

[0088] The male abutment formations 660 may be defined by rubber feet. This enables the spool 100 to stacked while having rubber feet 660 that remain in contact with the underlying support surface or adjacent spool 100. This may also assist to weigh down the spool 100 when it is close to empty. The male abutment formations 660 can be provided by replaceable rubber inserts. Alternatively, the male abutment formations 660 can be defined by projections which are integrally formed with the body of the first and second end plates 500, 600. Each of the sides of the end plates 500, 600 are the same, having like male abutment formations 660. Accordingly, the end plates 500, 600 are omnidirectional such that each of the sides of the end plates 500, 600 are the same and will interlock in any of the four possible orientations.

[0089] Figure 19 show an arrangement where four of the spools 100 are arranged in a two-by-two matrix. This arrangement employs engagement both horizontally with the first interlock 620, defined by projections 630 and depressions 640, and the second interlock formation 650, laterally interlocking the adjacent end plates 500, 600 in a vertical configuration.

[0090] Advantageously, the spool 100 when used in an interconnected assembly of other like spools 100 enables multiple cables to be dispensed simultaneously. This can be helpful in various installation scenarios, such as when multiple data or power cables need to be run concurrently.

[0091] Figures 14 and the detail of Figure 15 show that each of the first and second circular flanges 300, 400 includes an annular channel 675 configured to receive a corresponding projection 680 of one of the first and second end plates 500, 600. The projections 680 may be defined by a plurality of resiliently biased fingers 690, which are elastically deformable in a radial direction. In Figure 7 for example, the projections 680 are visible.

[0092] As shown in Figure 15, the projections 680 include an inclined surface 685 configured to urge against a portion of the first or second circular flange 300, 400 as the projection 680 move toward the annular channel. In an alternative arrangement, the projections 680 and annular channel 675 may be provide in an inverse manner, such that the projections 680 are located on the each of the first and second circular flanges 300, 400, and the annular channel 675 is located on the end plates 500, 600. It will be appreciated that the other securement means may be employed which enable the end plates 500, 600 to be rotatably coupled to the first and second circular flanges 300, 400, and selectively removable.

[0093] The rotational coupling between the end plates 500, 600 and the first and second circular flanges 300, 400 provides a small amount of frictional resistance to rotation. In practice, this results in the rotational coupling preventing significant cable over-run occurring when a user pulls the cable.

[0094] The end plates 500, 600 are snapped onto the flanges 300, 400 using snap fits. These snaps are removable so the end plates 500, 600 can be re-used or recycled while being strong enough to remain on the spool 100 during drop testing and use.

[0095] As shown in Figure 6, one of the first and second circular flanges 300, 400 includes a carry handle 700 which is moveable between an extended position, as shown in Figure 4, and a concealed or stowed position, as shown in Figure 5. In the stowed position, the handle 700 is seated below the surface of the circular flanges 300, 400, which reduces the likelihood of the handle 700 being unintentionally damaged. The carry handle 700 is spring biased toward the stowed position. The spring bias of the handle 700 ensures it remains down during cable winding, which may occur at a factory. In some arrangements a portion of the first

and second circular flanges 300, 400 urges the handle 700 to return toward the stowed position.

[0096] The operation of the spool 100 will now be described. Initially a length of cable, supplied in a coiled format, is loaded onto one of the first shaft portion 310 or second shaft portion 410. The two shaft portions 310, 410 are then connected in a coaxial manner, with the first and second engagement formations 320, 420 being snapped together. This arrangement defines a continuous shaft extending between the first and second circular flanges 300, 400. Alternatively, the cable can be manually wound onto the barrel 200 if the cable 50 is not already coiled.

[0097] The first end plate 500 is then coupled to the first circular flange 300, and the second end plate 600 is coupled to the second circular flange 400, to complete the spool assembly 100. The end plates 500, 600 are rotationally free to spin relative to the barrel assembly 200. Alternatively, it is possible for the end plates 500, 600 to be connected to the spool 100 prior to connecting the first shaft portion 310 and second shaft portion 410.

[0098] To dispense the cable or wire 50, a flat side edge of each of the first end plate 500 and second end plate 600 is positioned on a support surface, such as a bench or the ground. When a user pulls a free end of the cable or wire 50, the barrel assembly 200 is free to rotate relative to the first and second end plates 500, 600, enabling the cable or wire 50 to be unspooled. Friction between the first and second end plates 500, 600 and the circular flanges 300, 400 prevents or at least reduces the incidence of an over-run occurring, where an excess length of cable 50 unspools.

[0099] On completion of a cabling project, the user can separate the first and second engagement formations 320, 420 if desired to reduce the volume of space occupied by the spool 100. The first shaft portion 310 may then be inserted into an opening formed in the second end plate 600 such that the first shaft portion 310 is inserted into a trailing end of the second shaft portion 410, and the first flange 300 is located adjacent to the second flange 400. This nesting relationship between the two separable halves of the spool 100 significantly reduces storage volume and reduces the likelihood of any component parts being lost whilst not in use. The first and second end plates 500, 600 can optionally be removed.

[0100] A cable lock-off feature 490 is included in the spool 100, and visible in Figure 7. The cable lock-off 490 is provided by two corresponding holes formed in one of the circular flanges 300, 400 and one of the first end plate 500 and second end plate 600. By rotating the barrel 200 so that the two holes are brought in alignment, the cable or wire 50 can be inserted through the two holes of the cable lock-off feature 490. The presence of the cable or wire 50 within the cable lock-off feature 490 prevents relative rotation of the barrel 200 relative to the end plates 500, 600, preventing the cable or wire 50 from unintentionally unspooling. It also simplifies location of the cable 50 free end.

[0101] The location of the cable lock-off feature 490 is orientated so the handle 700 is in a comfortable position.

[0102] Wherever it is used, the word “comprising” is to be understood in its “open” sense, that is, in the sense of “including”, and thus not limited to its “closed” sense, that is the sense of “consisting only of”. A corresponding meaning is to be attributed to the corresponding words “comprise”, “comprised” and “comprises” where they appear.

Claims:

1. A cable or wire spool (100) comprising:

a longitudinally extending barrel assembly (200) having:

a first circular flange (300);

a first shaft portion (310) extending away from the first circular flange (300), the first shaft portion (310) having a first engagement formation (320);

a second circular flange (400);

a second shaft portion (410) extending away from the second circular flange (400), the second shaft portion (410) having a second engagement formation (420);

a first end plate (500) rotatably and removably coupled to the first circular flange (300);

a second end plate (600) rotatably and removably coupled to the second circular flange (400);

wherein the first engagement formation (320) is selectively engageable with the second engagement formation (420) to secure the first shaft portion (310) to the second shaft portion (410).

2. The cable or wire spool (100) of claim 1, wherein the first shaft portion (310) is engageable with the second shaft portion (410) in two configurations:

a first configuration in which the first circular flange (300) and the second circular flange (400) are located at opposing ends of the barrel assembly (200); or

a second configuration in which the first shaft portion (310) is inserted into an opening formed in the second circular flange (400) such that the first shaft portion (310) is inserted into a trailing end of the second shaft portion (410), and the first flanges (300) is located adjacent to the second flange (400).

3. The cable or wire spool (100) of either of the preceding claims, wherein at least one of the first and second circular flanges (300, 400) includes at least one aperture (330) providing a visual guide for evaluating a remaining length of cable or wire (50) spooled on the barrel assembly (200).

4. The cable or wire spool of claim 3, wherein the at least one aperture (300) is defined by a radially extending slot.

5. The cable or wire spool of claim 3 or 4, further comprising one or more indicators (340) adjacent to the at least one aperture (330), the indicators (340) being positioned at locations corresponding with different approximate remaining lengths of a spooled cable or wire (50).

6. The cable or wire spool (100) of any one of the preceding claims, wherein the first and second end plates (500, 600) each have a polygonal profile when viewed in end view.

7. The cable or wire spool of claim 6, wherein the first and second end plates (500, 600) each have a generally square profile when viewed in end view.

8. The cable or wire spool (100) of claim 7, wherein each corner and/or lateral outer surface of the first and second end plates includes a friction pad (510).

9. The cable or wire spool (100) of claim 7, wherein the first and second end plates (500, 600) each rest on a pair of heightening pads (512) having an adjustable height.

10. The cable or wire spool (100) of claim 9, wherein each heightening pad (512) comprises a removable piece (513) adapted to be in contact with a resting surface, a wedge (514) adapted to increase the height of the heightening pad (512) and an insert piece (515) arranged between the removable piece (513) and the wedge (514).

11. The cable or wire spool (100) of any one of the preceding claims, wherein at least one of the first and second end plates (500, 600) includes a first interlock formation (620) configured to interlock with another like end plate (500, 600) to enable two like cable or wire spools (100) to be connected end to end having coaxial barrel assemblies (200).

12. The cable or wire spool (100) of claim 11, wherein the first interlock formation (620) is defined by at least one projection (630) and at least one depression (640).

13. The cable or wire spool (100) of claim 12, wherein the first interlock formation (620) is defined by at least one projection (630) and at least one depression (640) at each of four corners of each end plate (500, 600).

14. The cable or wire spool (100) of any one of the preceding claims, wherein at least one of the first and second end plates (500, 600) include a second interlock formation (650) configured to laterally interlock with another like end plate (500, 600) to enable two like cable or wire spools (100) to be connected having parallel and offset barrel assemblies (200).

15. The cable or wire spool (200) of claim 14, wherein the second interlock formation (650) is defined by corresponding complementary male abutment formations (660) and female abutment formations (670).

16. The cable or wire spool (100) of claim 15, wherein the male and female abutment formations (660, 670) are defined by a series of ribs and spaces formed on a lateral surface of each of four sides of each end plate (500, 600).

17. The cable or wire spool (100) of any one of the preceding claims, wherein

at least one of the first and second end plates (500, 600) include a first interlock formation (620) configured to interlock with another like end plate (500, 600) to enable two or more like cable or wire spools (100) to be connected end to end with coaxial barrel assemblies; and

at least one of the first and second end plates (500, 600) include a second interlock formation (650) configured to laterally interlock with another like end plate (500, 600) to enable two or more like cable or wire spools (100) to be connected having parallel and offset barrel assemblies (200).

18. The cable or wire spool (100) of any one of the preceding claims, wherein each of the first and second circular flanges (300, 400) includes an annular channel

(675) configured to receive a corresponding projection (680) of one of the first and second end plates (500, 600).

19. The cable or wire spool (100) of claim 18, wherein the projection (680) includes an inclined surface (685) configured to urge against a portion of the first or second circular flange as the projection (680) moves toward the annular channel (675).

20. The cable or wire spool (100) of any one of the preceding claims, wherein each of the first and second circular flanges (300, 400) includes a carry handle (700) moveable between an extended position and a concealed stowed position.

21. The cable or wire spool (100) of claim 20 wherein the carry handle (700) is spring biased toward the stowed position.

22. A method of loading a length of cable or wire (50) onto a cable or wire spool (100), and subsequently dispensing the cable or wire (50), the spool (100) having:

a longitudinally extending barrel assembly (200) having:

a first circular flange (300), a first shaft portion (310) extending away from the first circular flange (300), the first shaft portion (310) having a first engagement formation (320);

a second circular flange (400), a second shaft portion (410) extending away from the second circular flange (400), the second shaft portion (410) having a second engagement formation (420);

the method including the steps of:

a) loading the length of cable or wire (50) on one of the first and second shaft portions (310, 410);

b) engaging the first engagement formation (320) with the second engagement formation (420) to define a continuous shaft between the first and second circular flanges (300, 400);

c) coupling a first end plate (500) to the first circular flange (300);

d) coupling a second end plate (600) to the second circular flange (400);

e) placing a flat edge of each of the first end plate (500) and second end plate (600) on a support surface; and

f) pulling a free end of the cable or wire (50) to permit the barrel assembly (200) to rotate relative to the first and second end plates (500, 600).

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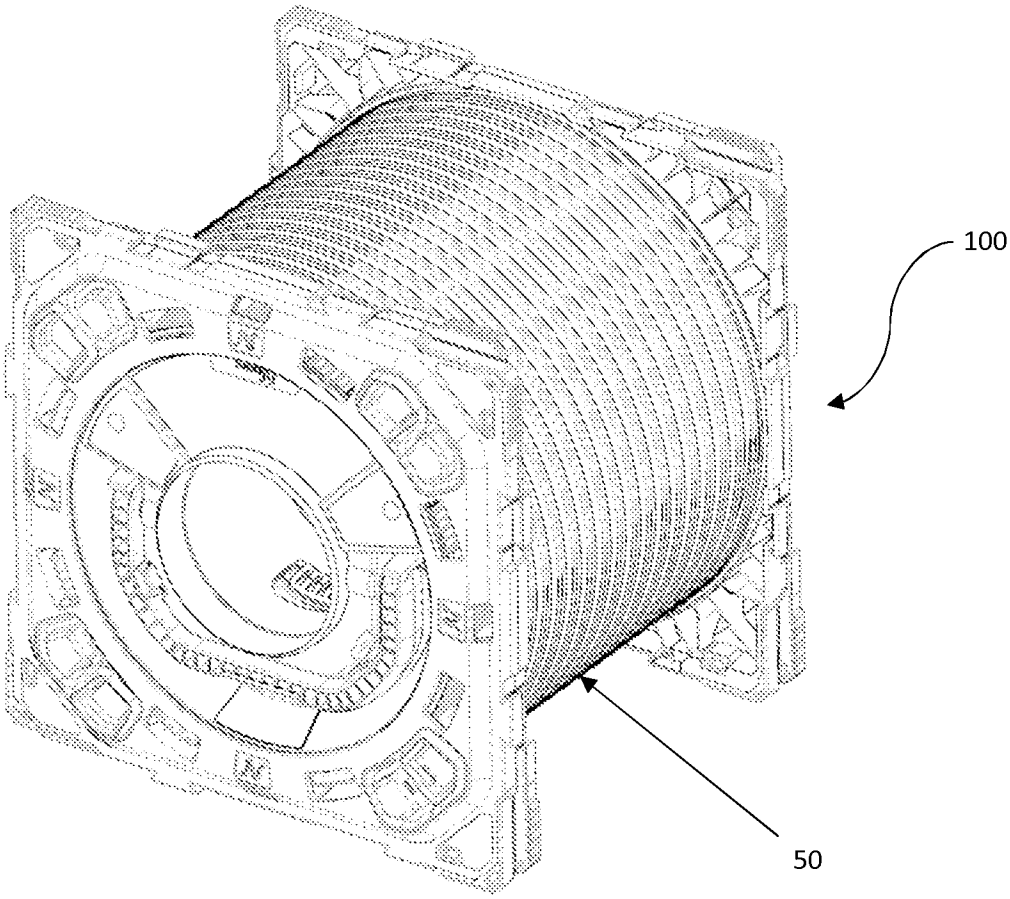


Figure 1

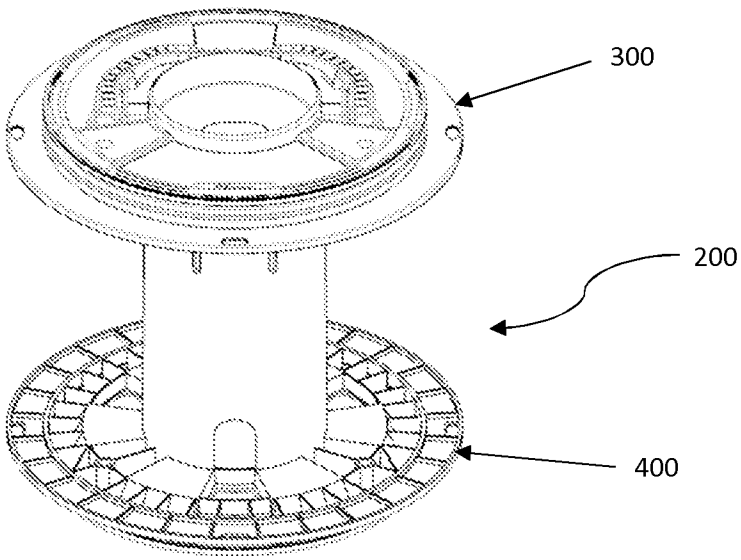


Figure 2

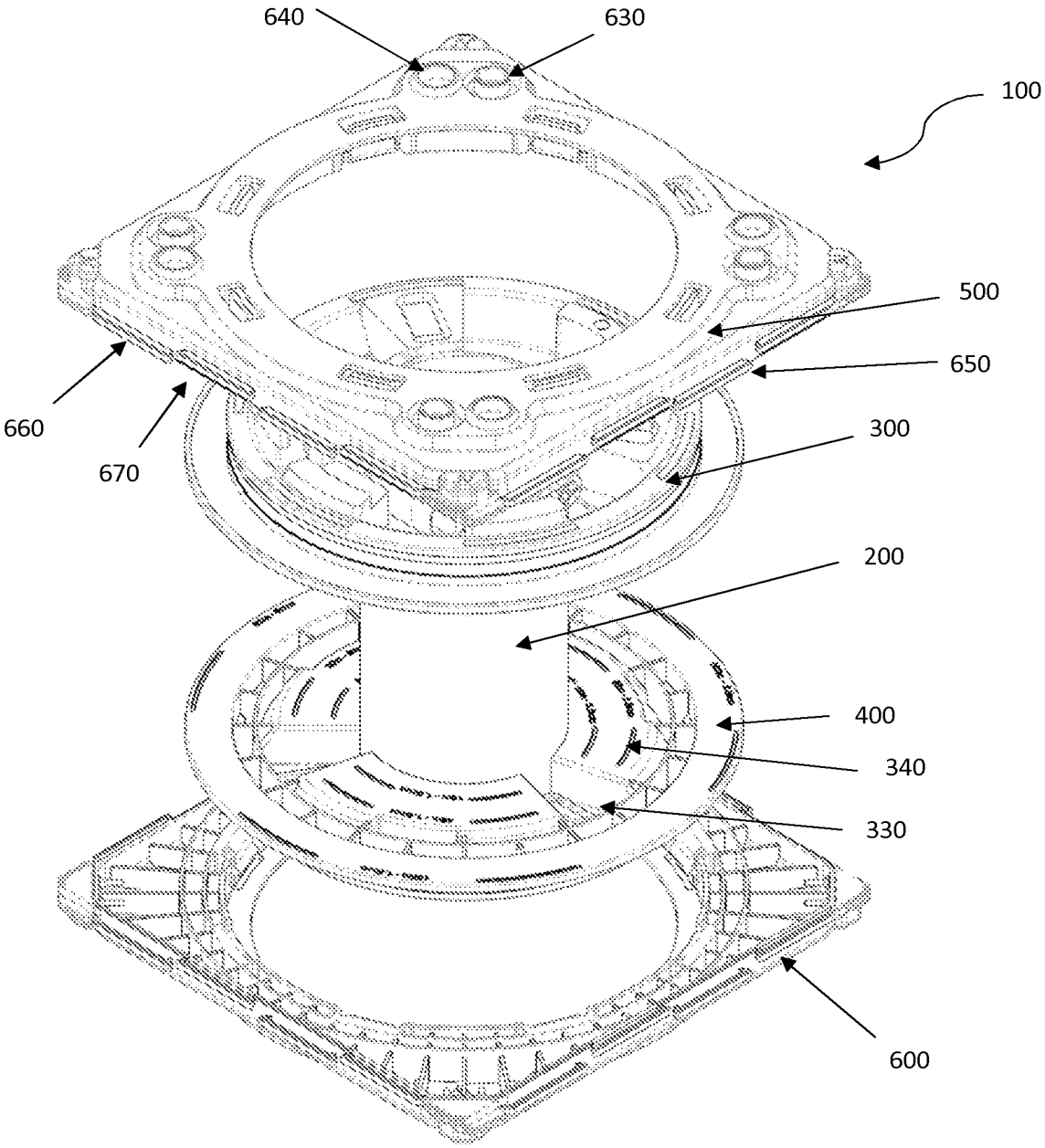


Figure 3

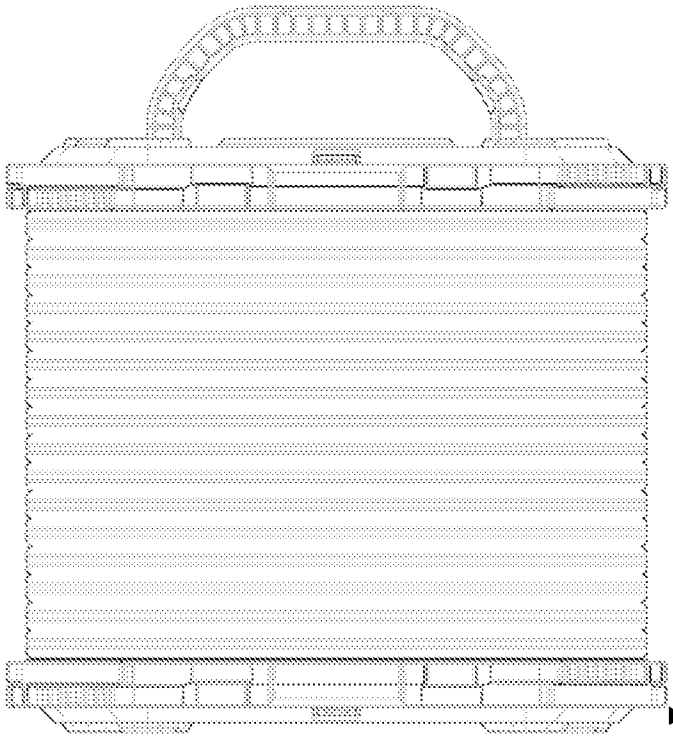
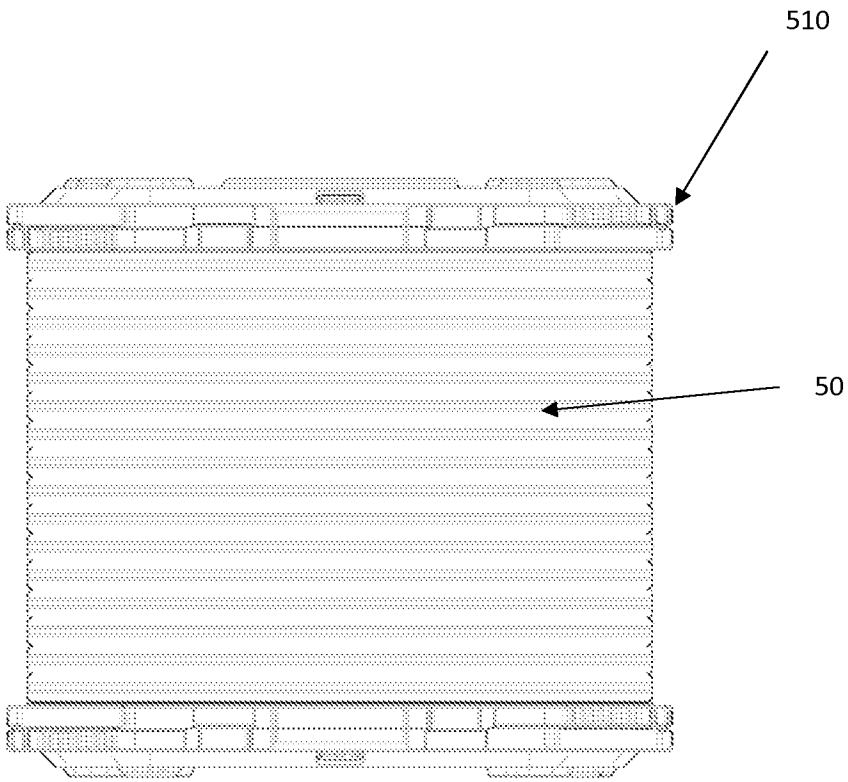


Figure 4



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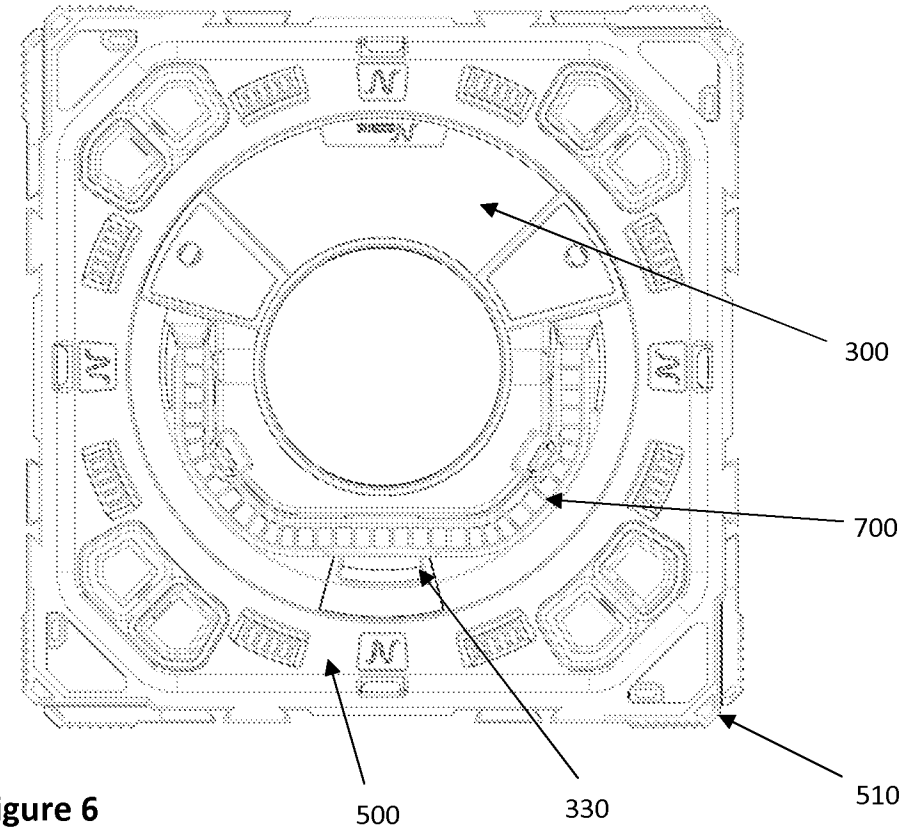


Figure 6

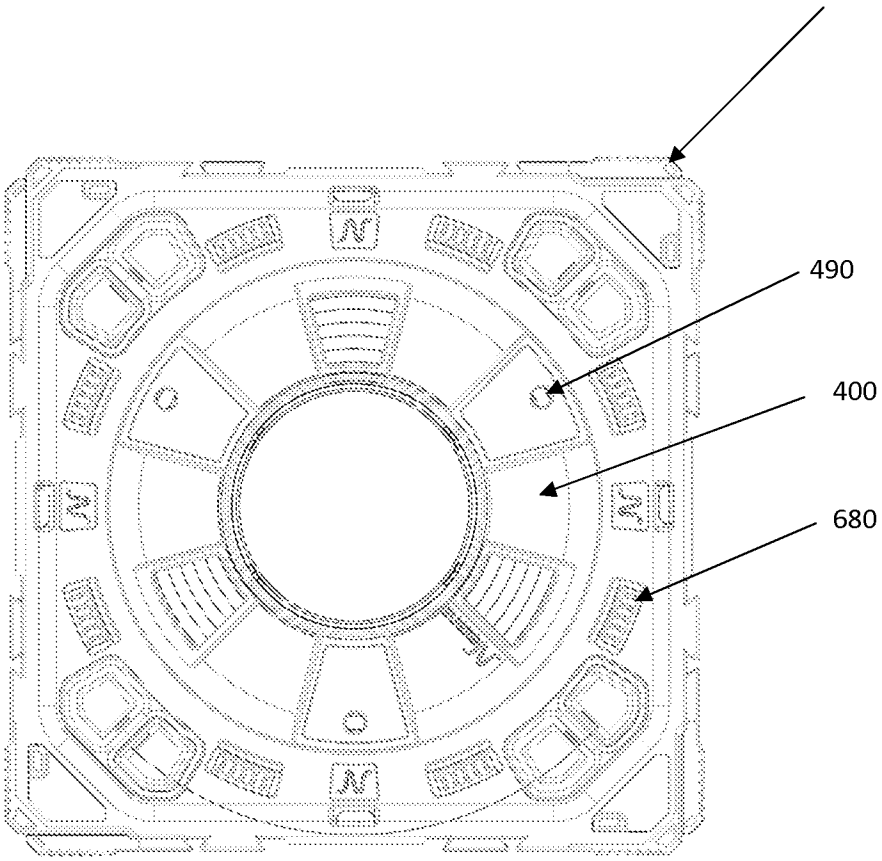


Figure 7

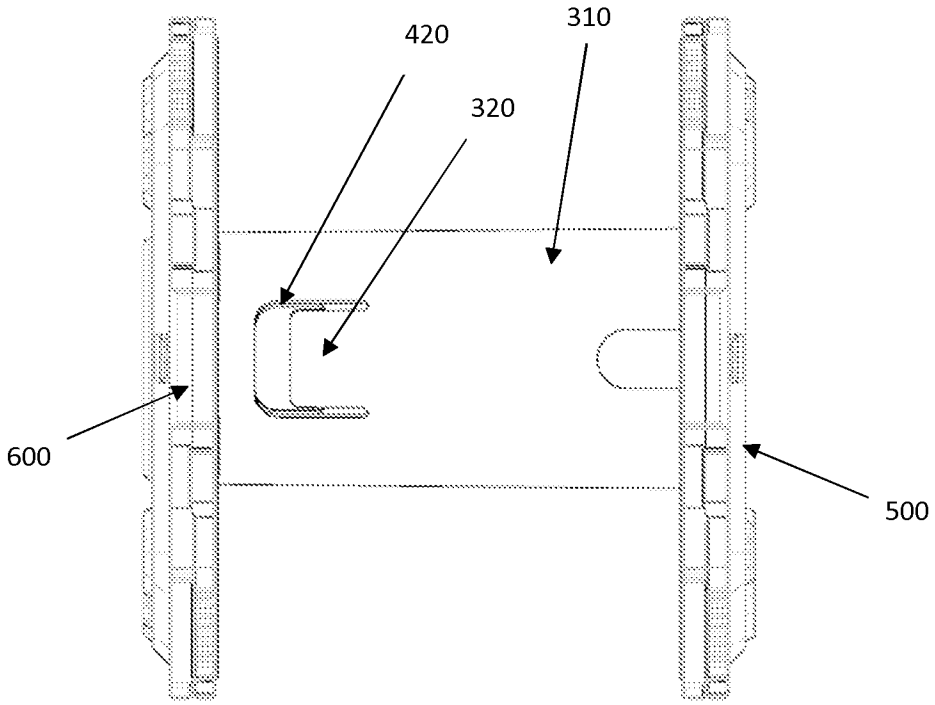


Figure 8

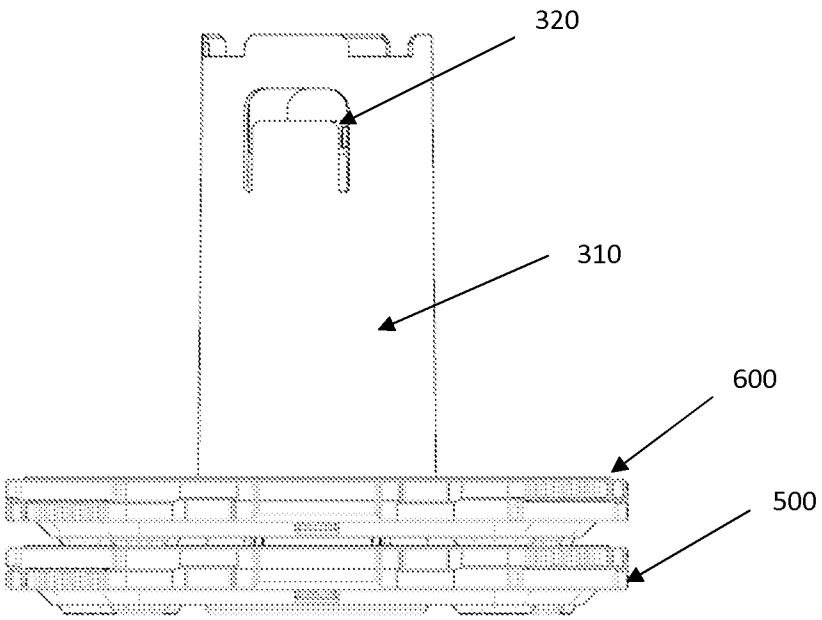


Figure 9

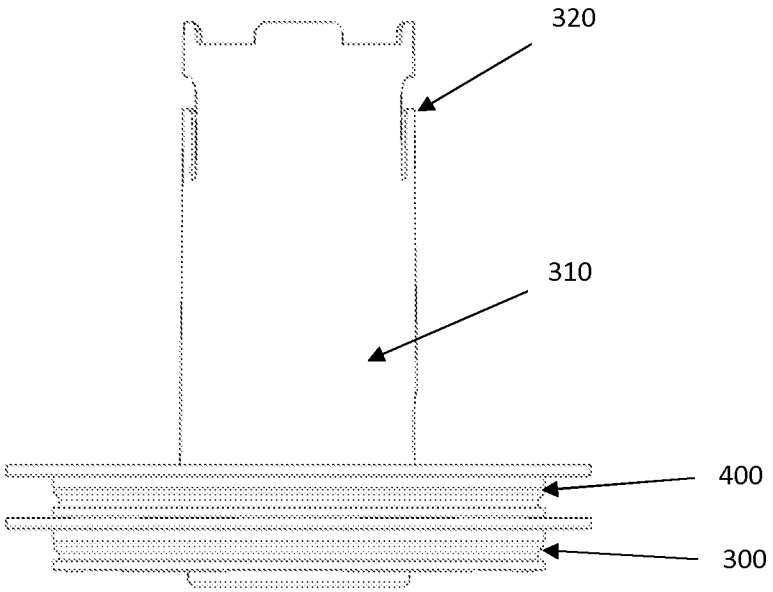


Figure 10

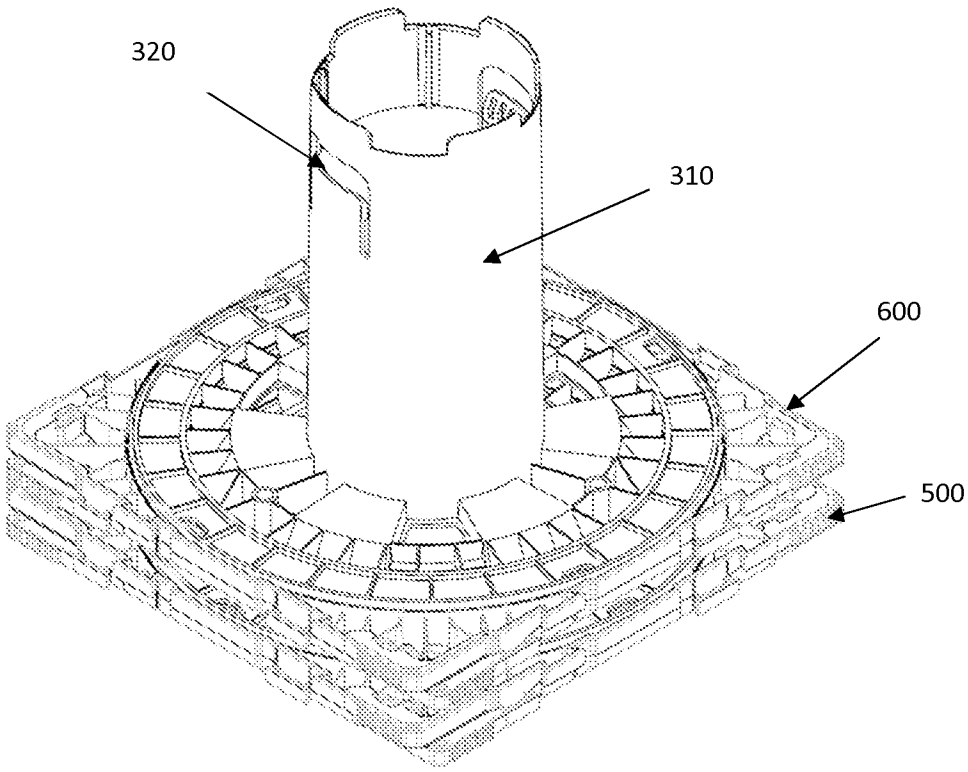
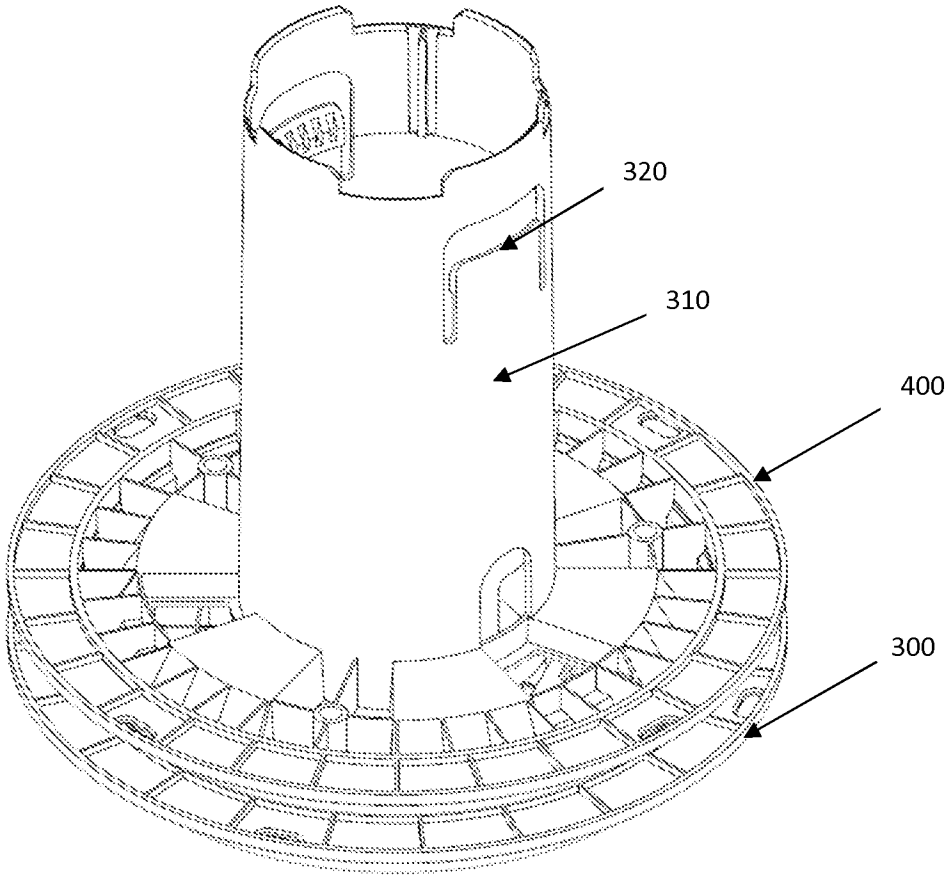


Figure 11



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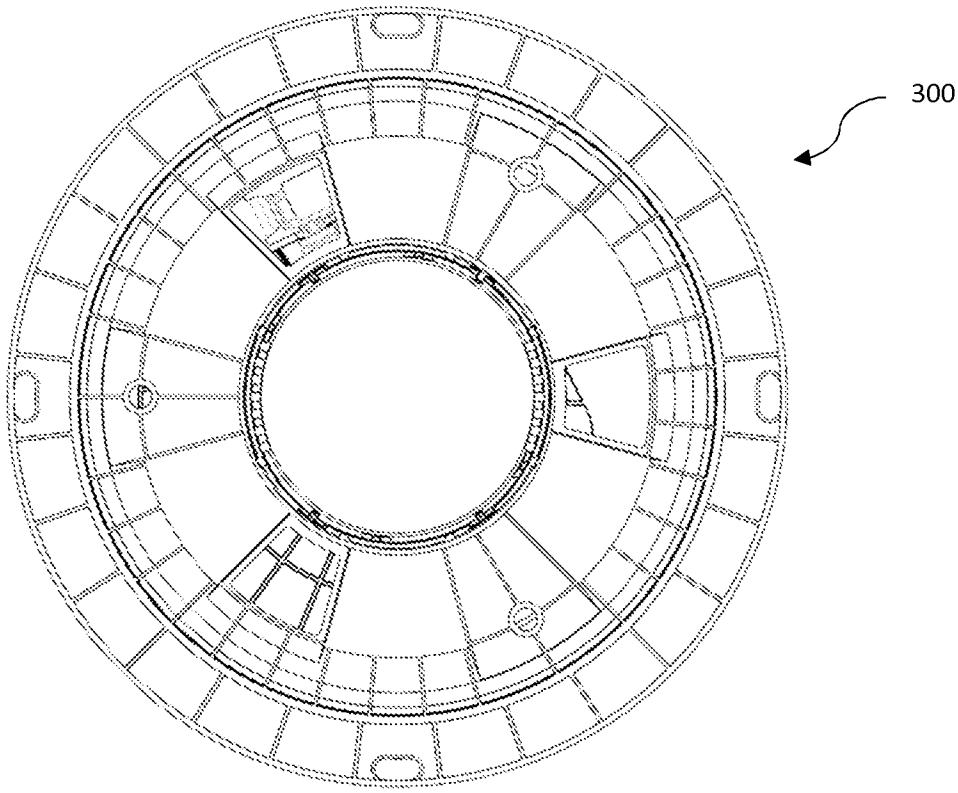

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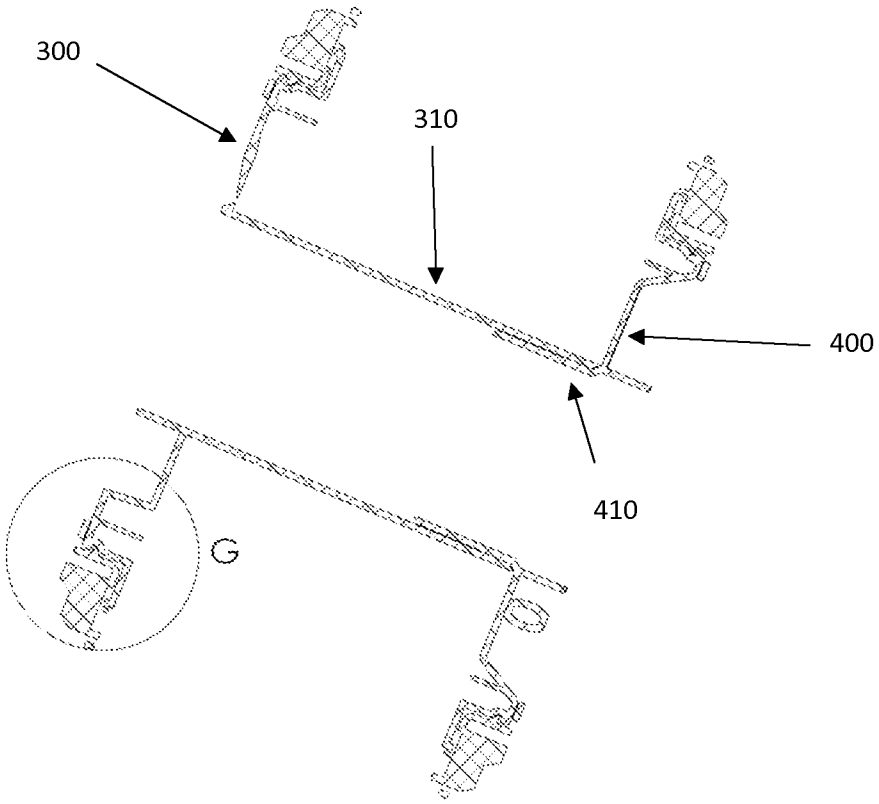
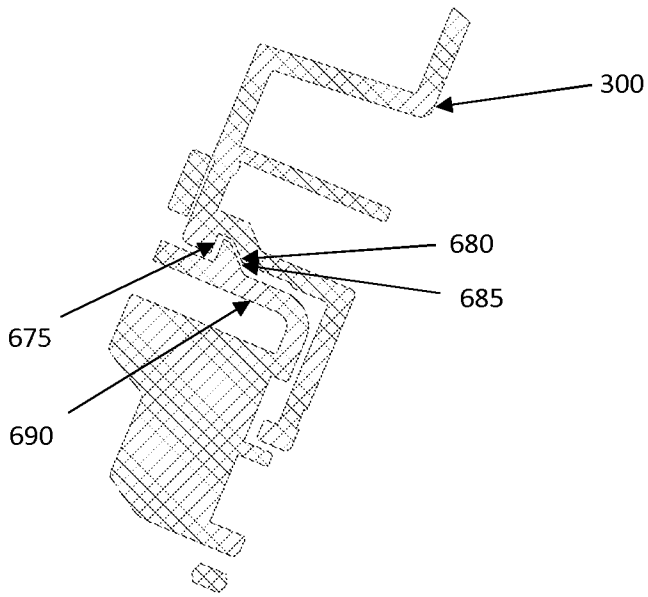


Figure 14



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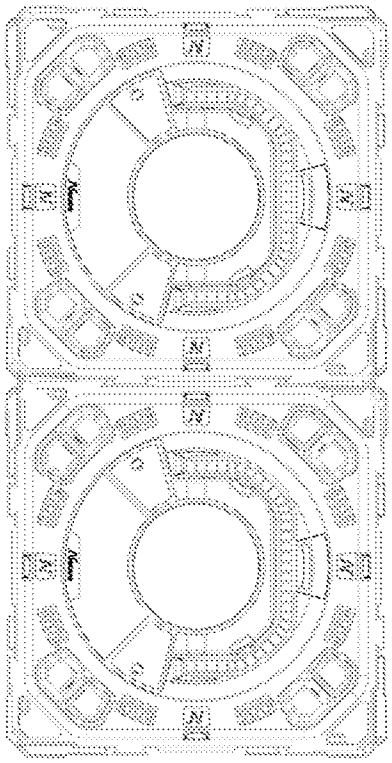

Figure 16

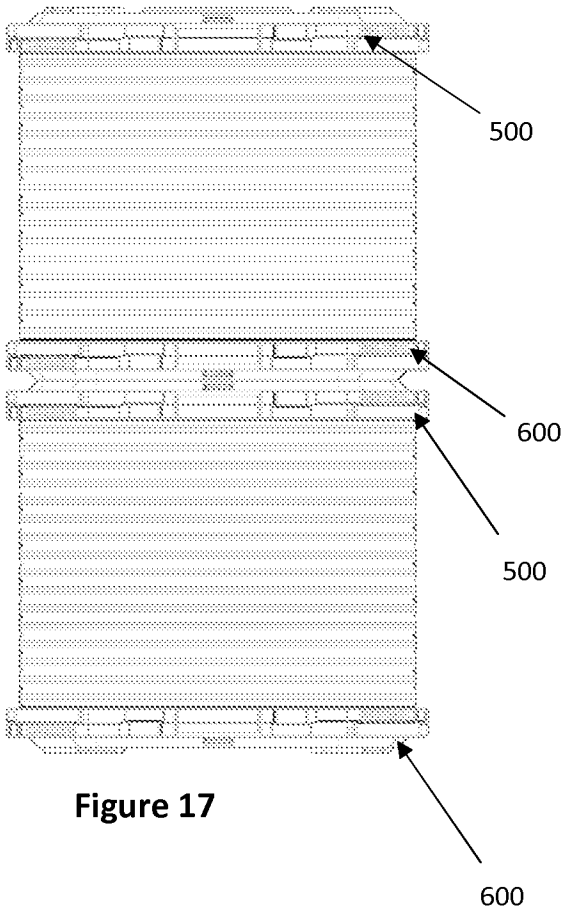

Figure 17

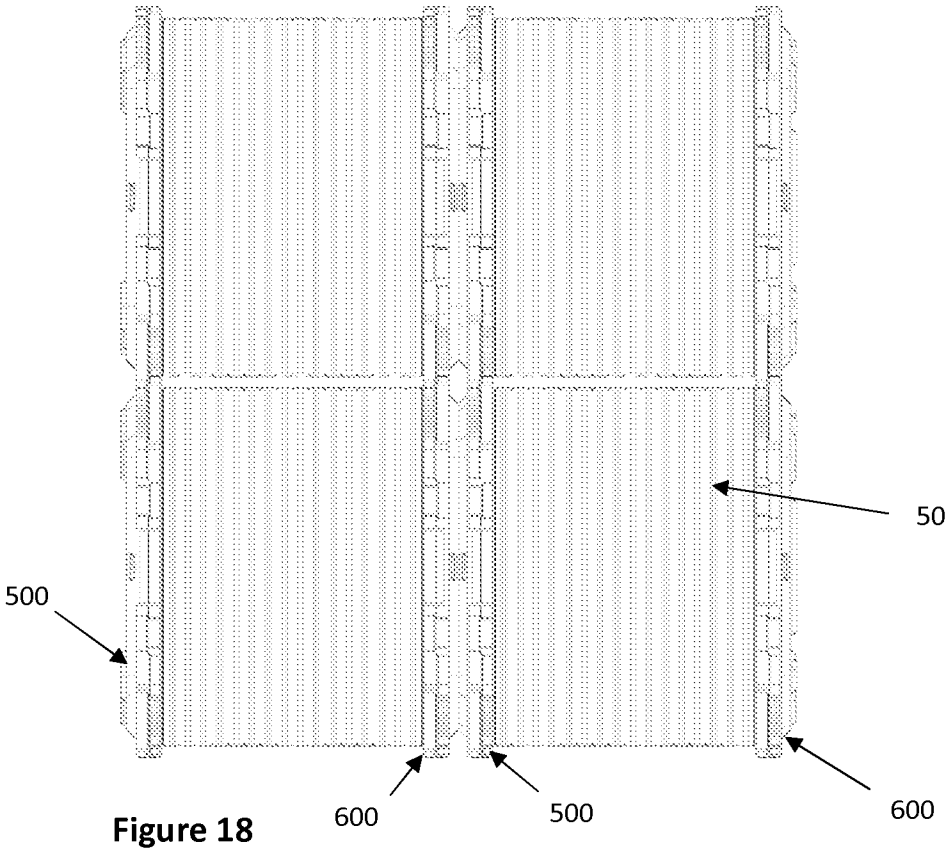

Figure 18

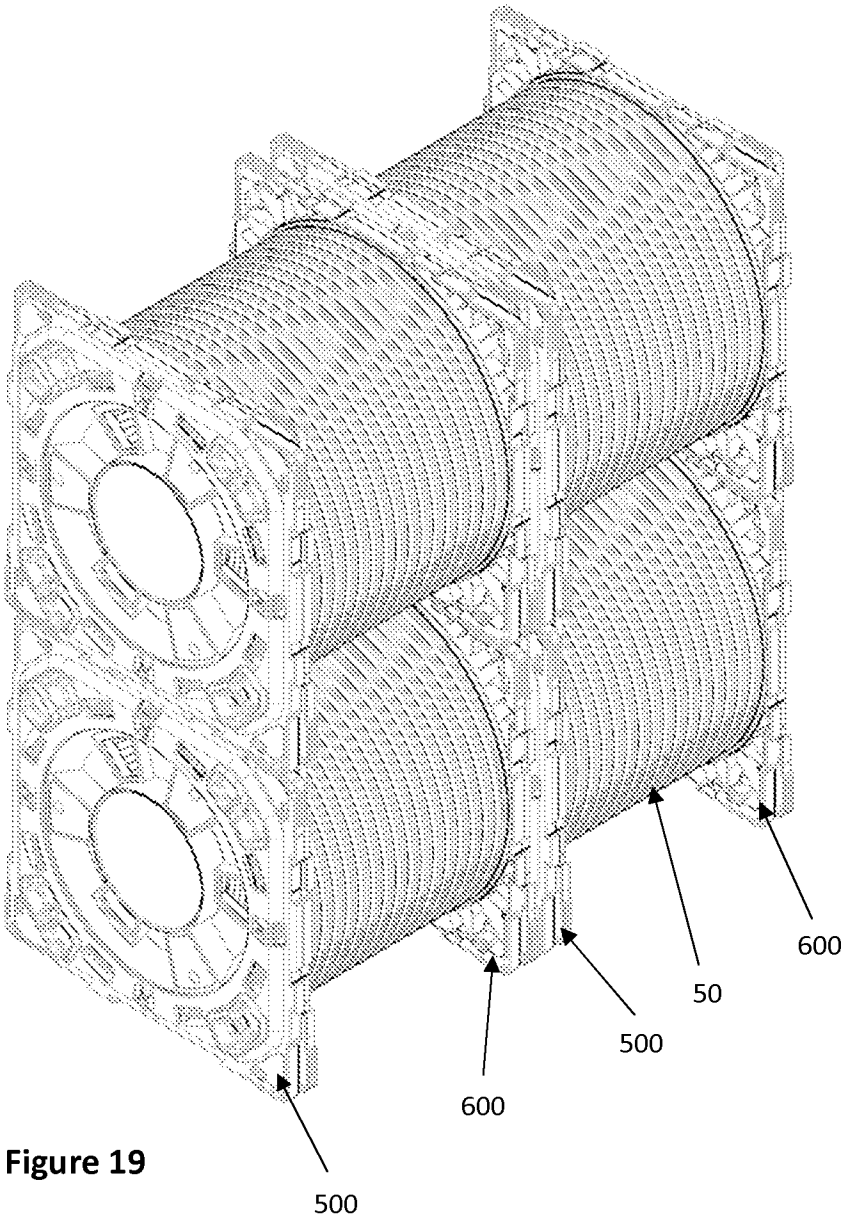

Figure 19

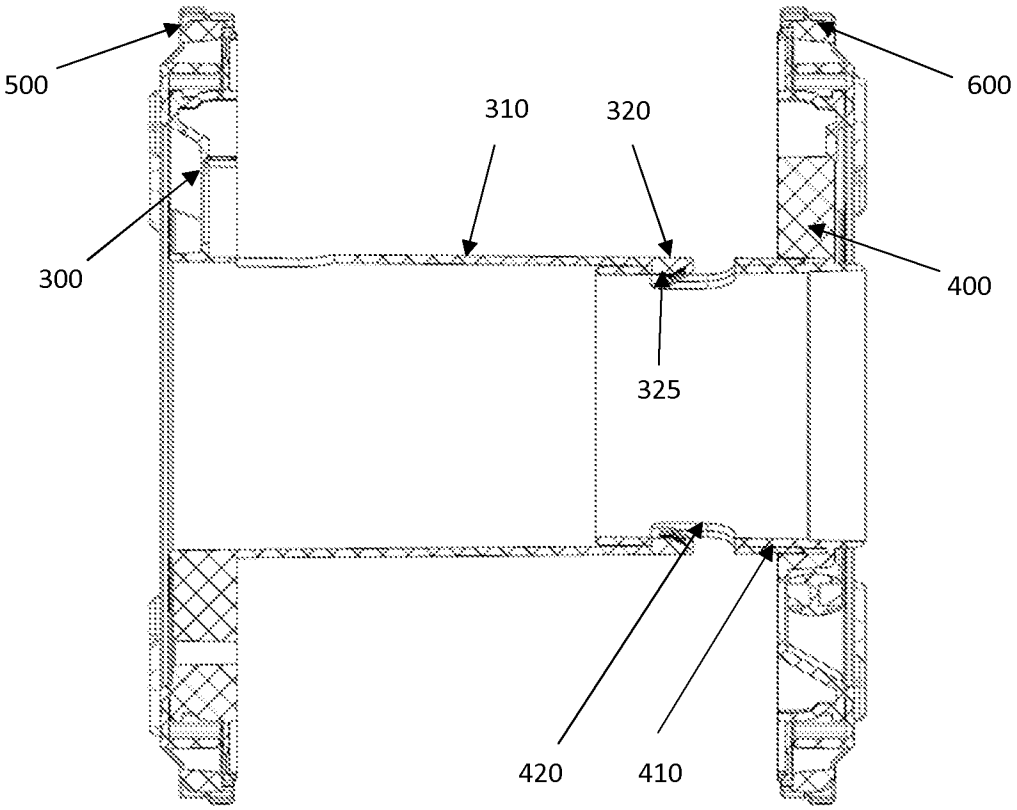

Figure 20

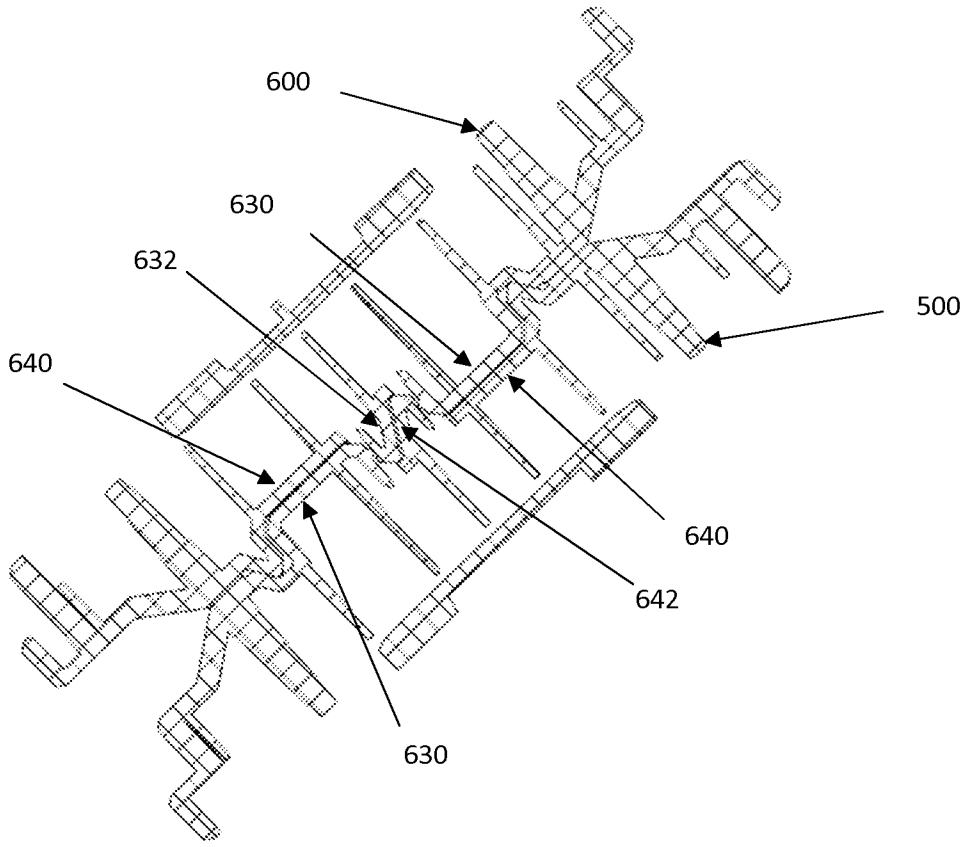

Figure 21

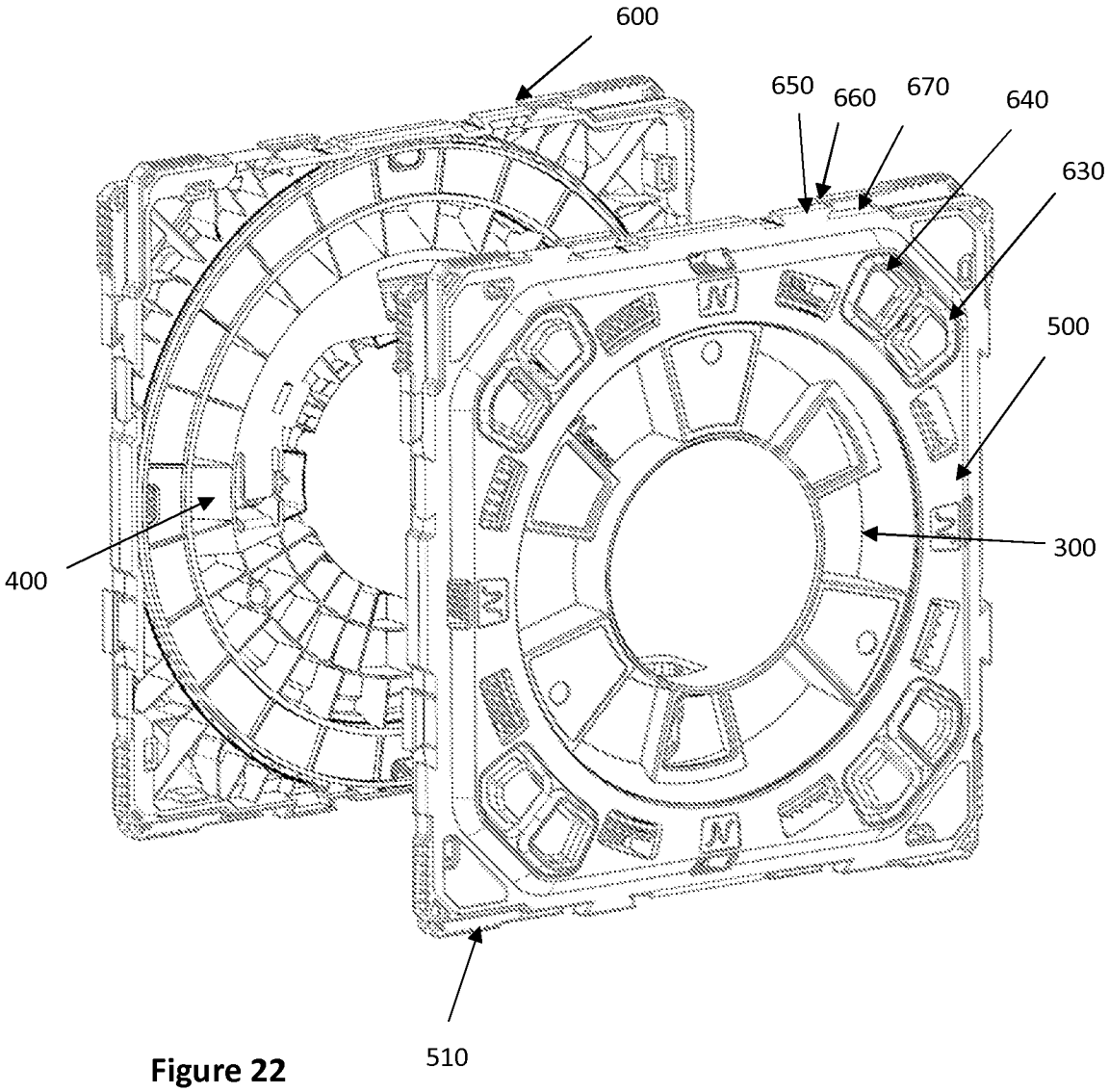

Figure 22

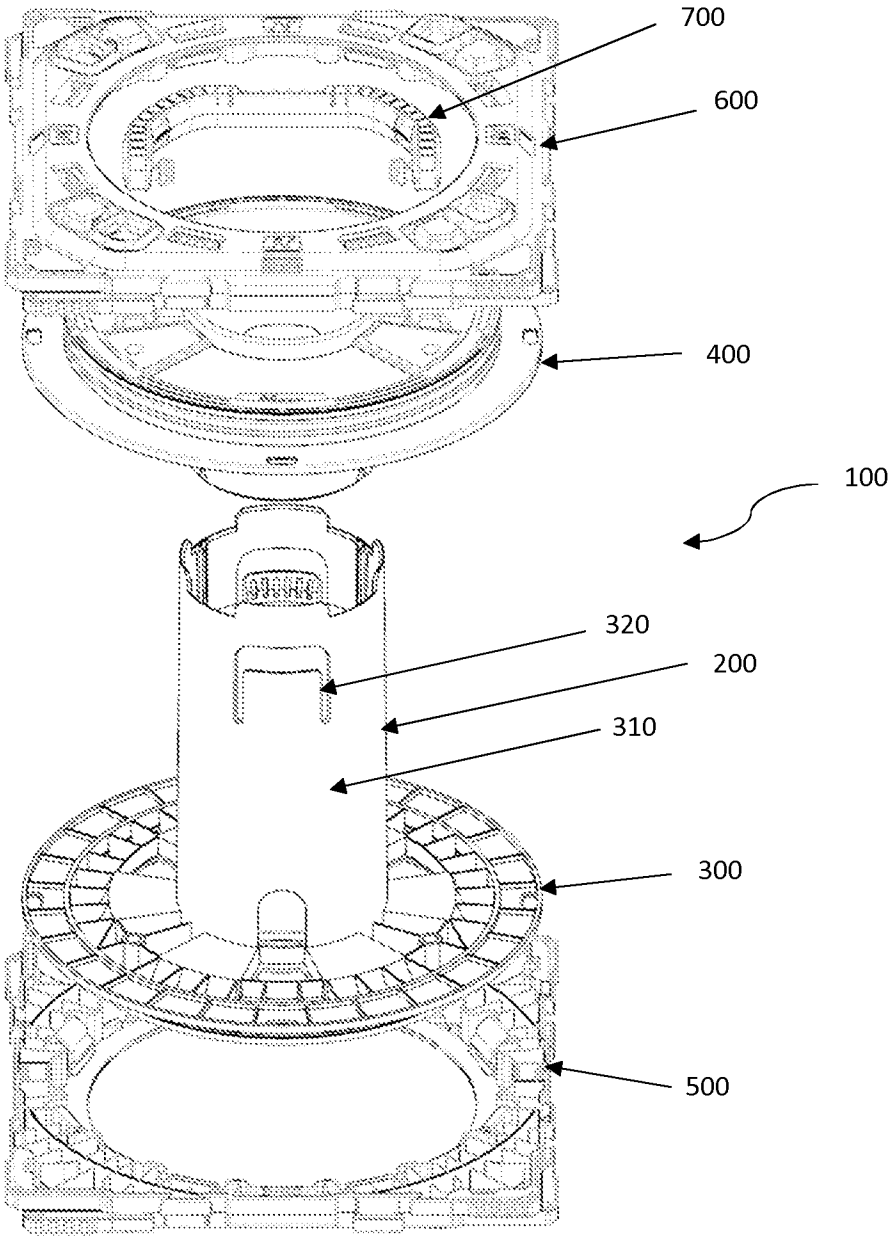

Figure 23

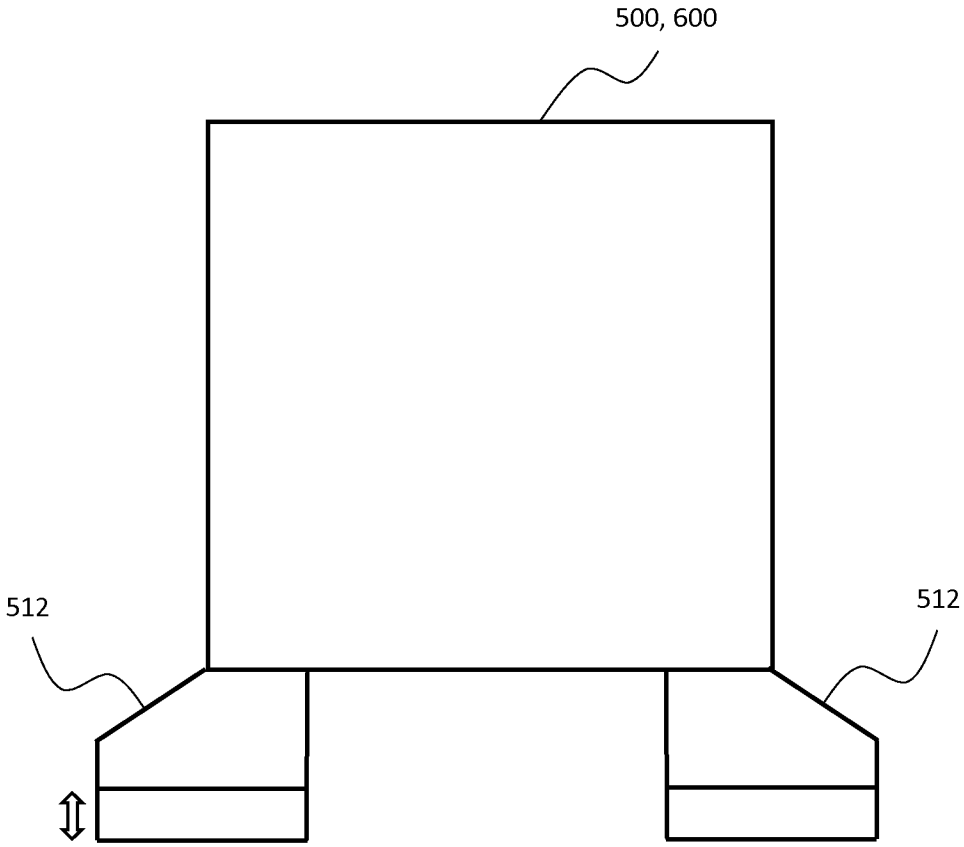

Figure 24

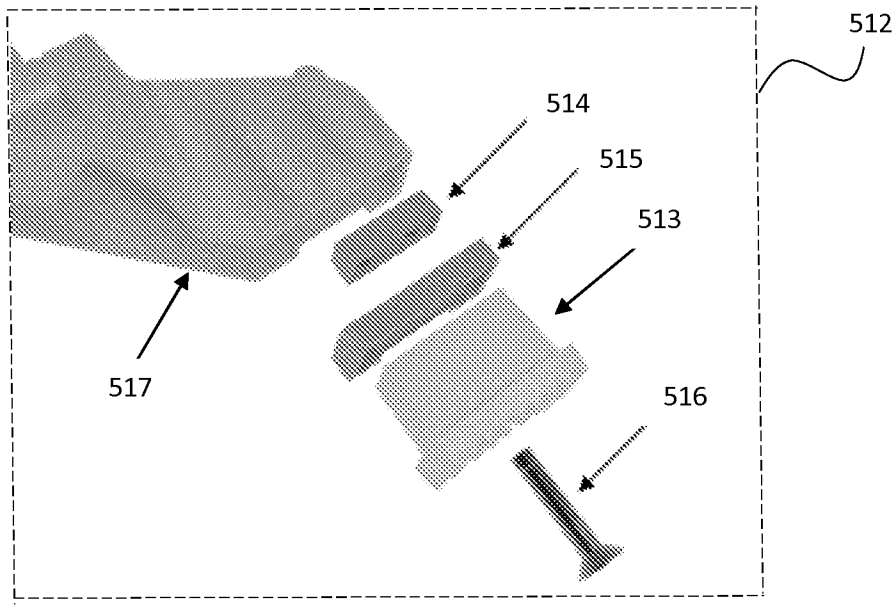

Figure 25

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2024/000305

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65H49/20 B65H49/32 B65H75/18 B65H75/22
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 2021/300718 A1 (THAKARE RAKESH [US] ET AL) 30 September 2021 (2021-09-30) paragraph [0045] paragraph [0050] figures 1, 4A, 4B	1,3-10, 18-22 2

X Y	US 9 637 343 B2 (ALLWOOD BRENT DAVID [AU]; COMMSCOPE TECHNOLOGIES LLC [US]) 2 May 2017 (2017-05-02) column 3, line 51 - column 4, line 54 column 6, line 5 - line 17 figures 1-5,11-13	1,3-7, 14-16, 20-22 2,11-13, 17

Y	DE 40 01 250 A1 (INDUSTRIEBEDARF EISELE & CO GM [DE]) 25 July 1991 (1991-07-25) figures 1,2,3,5	2

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance;; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance;; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 August 2024	02/09/2024

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Guisan, Thierry

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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2024/000305

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2011/101148 A1 (ALLWOOD BRENT DAVID [AU]) 5 May 2011 (2011-05-05) figures 1-11	11-13,17

2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2024/000305

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